DOCUMENT RESUME

ED 056 728 LI 003 272

AUTHOR	Wilkie, Lorna C., Ed.
TITLE	Directory of Educational Programs in Information Science 1971-1972.
INSTITUTION	American Society for Information Science, Washington, D.C.
SPONS AGENCY	American Society for Information Science, Washington, D.C. Special Interest Group on Education for Information Science.; ERIC Clearinghouse on Library and Information Sciences, Washington, D.C.
PUB DATE	Nov 71
NOTE	110p.; (3 References)
AVAILABLE FROM	American Society for Information Science, 1140 Connecticut Ave., Suite 804, Washington, D.C. 20036 (HC Members $4.50 Non-members $5.00)
EDRS PRICE	MF-$0.65 HC Not Available from EDRS.
DESCRIPTORS	Directories; *Education; Information Centers; Information Processing; *Information Science; *Information Scientists; *Information Systems; *Information Theory

ABSTRACT

For the purposes of this Directory, information science includes the following subjects: library and information systems, library automation and networks, systems analysis, management information systems, information needs and uses, abstracting and indexing, advanced classification theory, non-traditional techniques of organizing knowledge, management of technical information centers, reprography, computational linguistics, man-machine interaction, and information theory. The Directory includes an introduction, a table of contents, a compilation of entries arranged by school and department or program, and four indexes. Separate entries are made for each department or program even though some of them are at the same university. The "Index of Educational Institutions by State and Province" is an alphabetical list of the states in the United States and provinces in Canada. The other three indexes are: "Index of Degrees Offered," "Index of Information Science Courses Offered," and "Index of Faculty Members Interested in Information Science." This first edition of the Directory describes only those graduate programs with primary emphasis on information science rather than on its two major applications, namely computer science and library science. (Author/NH)

The American Society for Information Science (ASIS) is a nonprofit professional association organized for scientific, literary, and educational purposes and dedicated to the creation, organization, dissemination, and application of knowledge concerning information and its transfer. It was originally founded in 1937 as the American Documentation Institute. The gradually changing scope of interests of the Society resulted in the adoption of the current name at the start of 1968 to better reflect the members' interests in all aspects of the information transfer process.

ASIS is dedicated to the improvement of the information-transfer process through research, development, application, and education. It is concerned with the generation, collection, organization, interpretation, storage, retrieval, dissemination, transformation, and use of information, with particular emphasis on the applications of modern technologies in these areas. ASIS provides a forum for the discussion, publication, and critical analysis of work dealing with the theory and practice of all elements involved in the communication of information.

ASIS has a diverse membership reflecting the pioneering and changing aspects of an emerging subject. Its members include information specialists from such wide-ranging fields as librarianship, management, linguistics, operations research, computer science, psychology, symbolic logic, data processing, communications, economics, mathematics, education, and other disciplines concerned with information handling. The individual members are employed by universities, the information-products industry, government agencies, computer manufacturers, software companies, research institutes, and a wide variety of other types of organizations.

ASIS members are engaged in such diverse activities and specialties as:

- Classification and coding systems
- Automatic and associative indexing
- Microfilm and reprographic technology
- Development of electronic devices for information storage and retrieval
- User analyses of recorded information
- Telefacsimile dissemination of information
- Machine translation of languages
- Special librarianship and library systems analysis
- Computer typesetting and photocomposition
- Design of information networks
- Management and operation of information analysis centers
- Study of information behavior and requirements
- Computational linguistics
- Social implications of information science

Although the members and their activities are multifaceted, a common focus is found in the problems of the information transfer process.

ASIS membership now totals nearly 4000 individuals (including 460 students) and 54 institutions.

ED0 56728

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL BY MICROFICHE ONLY HAS BEEN GRANTED BY
American Society
for Information Science
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

DIRECTORY
of
EDUCATIONAL PROGRAMS
in
INFORMATION SCIENCE

FIRST EDITION

1971-1972

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

Edited by

Lorna C. Wilkie

ERIC Clearinghouse on Library and Information Sciences
1140 Connecticut Avenue, N.W., Suite 804
Washington, D.C. 20036

Special Interest Group on Education for
Information Science (SIG/ES) of the
American Society for Information Science

Education Committee of the
American Society for Information Science

AMERICAN SOCIETY FOR INFORMATION SCIENCE
Washington, D.C.
November 1971

LI 003 272

Copyright 1971 by the American Society for Information Science

All rights reserved. No part of this book may be reproduced in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information retrieval system without permission in writing from the American Society for Information Science.

ISBN: 0-87715-600-X

Library of Congress Catalog Card Number: 70-179373

CODEN: DEPIAQ

Printed in the United States of America.

This publication was prepared pursuant to a contract with the Office of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their judgment in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official Office of Education position or policy.

AMERICAN SOCIETY FOR INFORMATION SCIENCE
1140 Connecticut Avenue, N.W., Suite 804
Washington, D.C. 20036

CONTENTS

Introduction . . . v
- Purpose and Scope . . . v
- How to Use the Directory . . . v
- Acknowledgments . . . vi

Departments and Programs . . . 1
- Alberta, University of; School of Library Science . . . 3
- American University; Center for Technology and Administration . . . 3
- Auburn University; Department of Educational Media . . . 5
- Auburn University; Electrical Engineering Department . . . 5
- Auburn University; Department of Industrial Engineering . . . 6
- Bradley University; Computer Science Department . . . 7
- British Columbia, University of; School of Librarianship . . . 8
- California, University of, at Berkeley; School of Librarianship . . . 9
- California, University of, at Los Angeles; Computer Science Department . . . 10
- California, University of, at Los Angeles; Graduate School of Library Service . . . 11
- California, University of, at Los Angeles; Graduate Training Program in Medical Librarianship . . . 11
- Case Western Reserve University; School of Library Science . . . 12
- Chicago, University of; Committee on Information Sciences . . . 14
- Chicago, University of; Graduate Library School . . . 15
- Columbia University; School of Library Service . . . 16
- Cornell University; Department of Computer Science . . . 17
- Dalhousie University; School of Library Service . . . 18
- Dayton, University of; Graduate Program in Information Science . . . 18
- Denver, University of; Graduate School of Librarianship . . . 19
- Drexel University; Graduate School of Library Science . . . 19
- East Carolina University; Department of Library Science . . . 20
- Emory University; Division of Librarianship . . . 21
- Florida State University; School of Library Science . . . 22
- George Peabody College for Teachers; School of Library Science . . . 22
- Georgia Institute of Technology; School of Information and Computer Science . . . 23
- Harvard University; Division of Engineering and Applied Physics; Center for Research in Computing Technology . . . 25
- Houston, University of; Computer Science Department . . . 26
- Illinois, University of; Graduate School of Library Science . . . 27
- Illinois Institute of Technology; Department of Computer Science . . . 28
- Illinois Institute of Technology; Science Information Program . . . 28
- Indiana University; Graduate Library School . . . 29
- Iowa, University of; School of Library Science . . . 30
- Iowa State University; Department of Computer Science . . . 31
- Kansas State University; Department of Computer Science . . . 32
- Kent State University; School of Library Science . . . 33
- Kentucky, University of; College of Library Science . . . 33
- Lehigh University; Graduate Studies and Research in the Information Sciences . . . 34
- Long Island University; Palmer Graduate Library School . . . 34
- Maryland, University of; Computer Science Center . . . 35
- Maryland, University of; School of Library and Information Services . . . 36
- Massachusetts Institute of Technology; Electrical Engineering Department . . . 38
- McGill University; Graduate School of Library Science . . . 39
- Michigan, University of; Department of Computer and Communication Sciences . . . 39
- Michigan, University of; Department of Industrial Engineering . . . 41
- Michigan, University of; School of Library Science . . . 42
- Minnesota, University of; Library School . . . 43
- Missouri, University of, at Columbia; School of Library and Informational Science . . . 44
- Missouri, University of, at Rolla; Computer Science Department . . . 44
- Montreal, Universite de; Ecole de Bibliotheconomie . . . 45
- Nevada, University of . . . 46
- New York, City University of; Center for the Advancement of Library-Information Science . . . 46
- New York, City University of, Queens College; Library Science Department . . . 46
- New York, State University of, at Albany; School of Library and Information Science . . . 47
- New York, State University of, at Buffalo; School of Information and Library Studies . . . 49
- North Carolina, University of, at Chapel Hill; Department of Computer Science . . . 49
- North Carolina, University of, at Chapel Hill; School of Library Science . . . 50
- Northern Illinois University; Department of Library Science . . . 51
- Ohio State University; Department of Computer and Information Science . . . 52
- Oklahoma, University of; Graduate Program in Information and Computing Sciences . . . 54
- Oregon, University of; School of Librarianship . . . 55
- Peabody, George SEE George Peabody College for Teachers
- Pennsylvania, University of; Moore School of Electrical Engineering . . . 56
- Pennsylvania State University; Department of Computer Science . . . 57
- Pittsburgh, University of; Department of Computer Science . . . 58
- Pittsburgh, University of; Interdisciplinary Doctoral Program in Information Science . . . 60
- Pratt Institute; Graduate School of Library and Information Science . . . 62

Queens College SEE New York, City University of, Queens College
Rosary College; Graduate School of Library Science 63
Rutgers University, The State University of New Jersey; Graduate School of Library Service 64
Sacramento State College; School of Business Administration 65
St. John's University (New York); Department of Library Science 66
Simmons College; School of Library Science 66
Southern California, University of; Graduate School of Library Science 67
Southern Mississippi, University of; Department of Library Science 68
Stanford University; Department of Communication 69
Syracuse University; School of Library Science 70
Syracuse University; Systems and Information Science Program 71
Tennesee, University of, at Knoxville; Graduate School of Library and Information Science 72
Texas, University of, at Austin; Department of Computer Sciences 73
Texas, University of, at Austin; Graduate School of Library Science 74
Toledo, University of; Department of Library Science 75
Toronto, University of; School of Library Science 75
Washington, University of (Seattle); Computer Science Group 76
Washington, University of (Seattle); School of Librarianship 78
Washington University (St. Louis); Department of Applied Mathematics and Computer Science 79
Washington University School of Medicine (St. Louis); Traineeship in Computer Librarianship 80
Western Kentucky University; Department of Library Science 80
Western Michigan University; School of Librarianship 81
Western Ontario, University of; School of Library and Information Science 82
Wisconsin, University of, at Madison; Department of Computer Sciences 83
Wisconsin, Univerity of, at Madison; Library School 84
Wisconsin, University of, at Milwaukee; School of Library and Information Science 85
Yale University; Interdisciplinary Program in Information Science 85
Indexes 87
Index of Educational Institutions by State and Province 89
Index of Degrees Offered 91
Index of Information Science Courses Offered 93
Index of Faculty Members Interested in Information Science 101

INTRODUCTION

Purpose and Scope

The first edition of this Directory is a listing of 91 graduate-level academic programs that include education in information science in the United States and Canada for the academic year 1971-1972. Information science is a discipline derived from many other disciplines, arts, and professions. It has been defined generally to include the generation, collection, organization, interpretation, storage, retrieval, dissemination, transformation, and use of information. However, for the purposes of this Directory it is defined somewhat more specifically to include the following subjects: library and information systems, library automation and networks, systems analysis, management information systems, information needs and uses, abstracting and indexing, advanced classification theory, non-traditional techniques of organizing knowledge, management of technical information centers, reprography, computational linguistics, man-machine interaction, and information theory. Traditional librarianship, numerical information processing, and computer construction are excluded from this restricted definition.

Because of the great variety of course offerings in this field, the first edition of the Directory describes only those graduate programs where there is a primary emphasis on information science, rather than on its two major applications, namely computer science and library science. Those who are primarily interested in education in computer science are referred to "computer sciences and related degree programs," chapter V of *Inventory of Computers in U.S. Higher Education 1966-67*, by John W. Hamblen and published by the National Science Foundation in 1970. Those who are primarily interested in education in library science are referred to "Directory of the Association of American Library Schools" in *Journal of Education for Librarianship*, special edition 1971, 100 pages.

This Directory has been designed for use by various groups of people needing information on academic programs in information science, including such diverse groups as college and high school students considering information science as a career, guidance counselors and advisors to college and high school students, members of other disciplines charged with responsibility for providing information services, industrial managers interested in training programs for their employees, and government administrators. It should be regarded as a developmental work, which will be modified in future editions in response to the comments and suggestions of those who use it.

To obtain the maximum benefit from using this Directory, a few limitations should be kept in mind. First, it is a compilation based on questionnaires filled out by the schools themselves. This system increases the accuracy of data presented, but also increases the variability of scope and emphasis in the data. Not all respondents interpreted questions in the same way, and a few left some questions to be filled in by searching through various catalogs and other information. Although the entries for each program were returned to the schools for checking and correction if necessary, some of these returned entries had not been received when the Directory went to press. Readers are urged to obtain more detailed and up-to-date information directly from the schools. ASIS headquarters also maintains a current collection of information science course descriptions, catalogs, syllabi, reading lists, program outlines, and other descriptive material concerning education for information science. These materials can be examined at ASIS, 1140 Connecticut Avenue, N.W., Suite 804, Washington, D.C. 20036; telephone: (202) 659-3644.

Another problem is the variability of the information science vocabulary. The terminology of information science is used differently by different groups even within the discipline of information science itself, and the vocabulary is changing rapidly. Resolution of the problem is far beyond the scope of this Directory; thus course titles and descriptions, and the course index, contain many synonyms and near-synonyms, and the same terms may have quite different meanings in different programs. Standardization of nomenclature is contemplated.

How To Use The Directory

The Directory includes, besides this introduction, a table of contents, a compilation of entries arranged by school and department or program (the main body of the Directory), and four indexes. Separate entries have been made for each department or program, even though some of them are at the same university.

The entry for each program begins with a heading, which includes the name of the college or university in upper-case boldface print on the first line, the department or program on the second line, the rest of the mailing address in smaller print, and the telephone number of the department or program on the last line. The person listed under **Director of Program** may be the director or chairman of the department or the dean of a graduate professional school; the applicable title is indicated wherever possible. In a few cases, two people are listed–the department chairman or dean, and the director of the information science program. If these individuals do not teach information science courses, their faculty rank, degrees, subjects of degrees, schools, and years, along with particular interests where known, are included under this heading. However, if, as is often the case, the same person also teaches information science courses, his or her name is given again under faculty, and faculty rank, degrees, etc., appear on the faculty list only. In all such instances, the instruction "(see faculty list below)" has been included to indicate that incomplete information is given under **Director of Program.**

The **Description of Program** is usually given exactly as received from the department or program, more rarely, in somewhat abbreviated form. The four approaches to the organization of information science curricula identified by Borko and Hayes (see references at end of introduction) were used as an initial reference base in writing these descriptions. Their four categories are: (1) the theoretically oriented curriculum; (2) the computer science-oriented curriculum; (3) the library-oriented curriculum; and (4) the systems-oriented curriculum. The positions listed under **Employment Preparation** are those indicated by the school.

Under **Degrees**, each degree is listed in boldface print, with the requirements for the degree in regular print. Ordinarily the number of required credit hours is followed by the level of performance expected, some indication of the courses which must be taken, the foreign-language requirement if any, and a statement of thesis requirement. Although these notes are believed to be reasonably complete, because of the need for brevity some relatively minor requirements may have been omitted.

Under **Faculty** are listed, not all faculty members in the department, but *only those members either teaching information science courses listed in this Directory or known to be interested in information science*, as defined above. In most instances, the figures under **Students Specializing in Information Science** are actually figures on total enrollment in the department. Only a few schools were able to give figures on specialists in information science only, and these are indicated where available.

The **Information Science Courses** listed are those included in the specific definition of information science given above. There is at present no consensus as to what are information science courses and what are not. Course descriptions are given only for introductory courses and courses whose titles may be ambiguous. **Institutes and Short Courses** include continuing education, colloquia, symposia, and conferences. Only very brief generalized descriptions are given. **Research Opportunities for Students** fall into two main categories: (1) opportunities for work on research problems, as thesis projects or as assigned work under assistantships; and (2) opportunities for practical professional experience. **Computer Facilities** commonly include all facilities on campus, and in a few instances even facilities at nearby institutions, used on a cooperative basis.

Admission Requirements, like the requirements for degrees, are listed under each degree, unless they are the same for all degrees offered by the department. The T.O.E.F.L. is the Test of English as a Foreign Language; G.R.E. stands for the Graduate Record Examinations, given by the Educational Testing Service, Princeton, N.J. **Tuition and Fees** may in some cases include tuition only, without additional fees. Available categories of **Financial Aid** are listed, and wherever possible the amounts awarded are included. Information on requirements for qualification for such aid is not given.

Four indexes are included in the Directory. In the **Index of Educational Institutions by State and Province**, the states of the United States and the provinces of Canada are arranged in alphabetical order, with the educational institutions and departments or programs given under each. The various degrees offered by these educational programs, as given in boldface print under the heading **Degrees**, are alphabetized in the **Index of Degrees Offered** and indexed to the educational institution (in the form used for the running heads) and the department or program (indicated by a code from the following list): (BA) for Business Administration; (C) for Computer Science; (Comm.) for Communication; (EdM) for Educational Media; (EE) for Electrical Engineering; (IE) for Industrial Engineering; (IS) for Information Science; (L) for Library Science; (Med. L) for Medical Librarianship; and (Sci. I) for Science Information. The **Index of Information Science Courses Offered** is an alphabetical compilation of the information science courses listed for each department or program. The courses are indexed to educational institution and department or program, in the form used for the degree index, plus course number. Synonyms and overlapping terms may not be completely cross-referenced in this index. The **Index of Faculty Members Interested in Information Science** includes all names listed under **Faculty** for each department or program. Each name, in inverted form, is followed by the name of the institution (in running-head form) and the department code (as listed above for the degree index).

Acknowledgments

ASIS wishes to thank the chairmen, deans, and directors of departments and programs for their cooperation in the preparation of materials included in this Directory.

An advisory group headed by Dr. Laurence B. Heilprin (University of Maryland) and including Dr. Marilyn C. Bracken (National Agricultural Library) and Robert McAfee, Jr. (ASIS staff) developed the idea for the Directory and established criteria for reporting on information science courses and programs. Dr. Heilprin was especially effective in serving as the catalyst that organized the project, and Dr. Bracken was instrumental in developing the data-collection form sent to universities and colleges. Support for the Directory was provided by the ASIS Education Committee, the ASIS Special Interest Group on Education for Information Science, and the ERIC Clearinghouse on Library and Information Sciences. ASIS acknowledges the advice provided by the following individuals: Edmond Mignon (University of Washington and Chairman, ASIS Education Committee); Dr. Tefko Saracevic (Case Western Reserve University and Chairman, ASIS Special Interest Group on Education for Information Science); Prof. Pauline Atherton (Syracuse University); Prof. Harold Borko (U.C.L.A.); Prof. Jack Belzer (University of Pittsburgh); Lois F. Lunin (Johns Hopkins University School of Medicine); Prof. Paul Wasserman (University of Maryland); and Joshua I. Smith (ERIC Clearinghouse on Library and Information Sciences).

Special thanks are due the Biological Sciences Communication Project of The George Washington University (especially Sharon Kirby, Lois Payn, Terry Bradshaw and David Bosley) for preparing the Directory for printing on a short time schedule.

Although this is the first edition of this Directory, previous work of a similar nature has been helpful in its compilation. Previous publications of this kind include:

1. Borko, Harold, and Hayes, Robert M. (1970) *Education for Information Science (Documentation)*. Los Angeles: U.C.L.A. Institute of Library Research. 17p. (Series of reports on education for information science (documentation), no.3).

2. Bracken, Marilyn C. and Shilling, Charles W. (1966) "Education and Training of Information Specialists in the U.S.A." Biological Sciences Communication Project *Communique*, 24-66. 70p.

3. International Federation for Documentation (1969) *A Guide to the World's Training Facilities in Documentation and Information Work*. 2nd ed. The Hague: International Federation for Documentation. (FID 461).

DEPARTMENTS AND PROGRAMS

UNIVERSITY OF ALBERTA
SCHOOL OF LIBRARY SCIENCE

320 Rutherford Library
Edmonton 7, Alberta, Canada
(403) 432-4140

Director of Program: (Miss) Mary E.P. Henderson; Acting Director and Associate Professor; M.A. in English (hons.), British Columbia, 1943; B.L.S., Toronto, 1944.

Description of Program: The beginning professional degree in library science is offered; graduates are prepared for service in all fields.

Employment Preparation: Library positions of all types.

Degrees:
B.L.S.: One academic year after a basic degree.
M.L.S.: Since the program is not to be offered until 1972 all details have not yet been finalized.

Faculty:
Bertram, (Mrs.) Sheila Kelley; Associate Professor; B.L.S., Toronto, 1963; M.S. in Library Science, Ph.D. in Library Science, Illinois, 1966, 1970.

Students Specializing in Information Science: Specialization in Information Science not available.

Information Science Courses:
LIB S 409 Automation and Libraries (2) F,Sp Bertram
LIB S 437 History and Theory of Classification and Cataloging (2) Sp

Institutes and Short Courses: Present plans call for the students, as part of their course, to prepare and present a survey-type workshop on automation in libraries for local libraries.

Research Opportunities for Students: The one course in information science being offered is not sufficiently detailed to prepare the students for research activities. The School cooperates with the Department of Computing Science on campus.

Computer Facilities: IBM 360/67; CAI 1500.

Admission Requirements:
B.L.S.: Bachelor's degree with at least a B average; library experience.
M.L.S.: B.L.S. with at least a B average; preference will be given to candidates with two or more years of significant library experience.

Tuition and Fees: $440 per year.

Financial Aid: A number of Province of Alberta Graduate Fellowships of $4200 each; a number of Province of Alberta Graduate Scholarships of $3000 to $3600 each; several smaller awards, grants, and loans.

THE AMERICAN UNIVERSITY
CENTER FOR TECHNOLOGY AND ADMINISTRATION

Massachusetts and Nebraska Avenues, N.W.
Washington, D.C. 20016
(202) 686-2513

Director of Program: Paul W. Howerton (see faculty list below).

Description of Program: The discipline, Technology of Management, exists apart from business administration, public administration, and the classical fields of mathematics and science. The discipline should be included in the education of those people who will be involved in the management, or design, or development of large, complex systems involving people, resources and objectives. It includes, but is not limited to, the use of computers and the associated technologies in the information sciences such as systems analysis, systems dynamics, statistics, computer-assisted instruction, command and control systems, business data systems, information storage and retrieval, simulation and modeling, and quantitative policy development. Degree candidates may concentrate their efforts in computer systems, operations research, management information systems, scientific and technical information systems, R&D management, or environmental systems management.

Employment Preparation: Education and research positions, and integrative positions such as systems design and management.

Degrees:
M.S. in Technology of Management: Requires 33 graduate hours plus certain prerequisites. Two comprehensive examinations are selected from: computer systems, operations research, scientific and technical information systems, management information systems, and research and development management. A thesis option of 3 or 6 credit hours is offered.
Doctoral Programs: Offered in collaboration with the School of Business Administration and the School of Government and Public Administration. Requirements are specified by the collaborating school. Ph.D. in Chemical Information Systems offered jointly with the Department of Chemistry.

Faculty:

Bassler, Richard A.; Director, Computer Systems Program; Assistant Professor of Information Sciences; M.S., George Washington.
Cole, Ralph I.; Director, Graduate R&D Program; Associate Professor of R&D Management; M.S., Rutgers.
Fassberg, Harold E.; Interim Director for Operations Research Program; Adjunct Professor; M.A., Pittsburgh; Ph.D., American U.
Gammon, William Howard; Assistant Professor of Information Science; M.A., American U.
Hattery, Lowell H.; Professor of Management and Public Administration; Ph.D. in Public Administration, American U., 1951.
Howerton, Paul W.; Director; Assistant Dean for Institute & Management Programs; Adjunct Professor of Management Science; Ph.B. (hon.), Northwestern, 1949.
Kennevan, Walter J.; Director, Management Information Systems Program; Assistant Professor of Information Science; M.C.S., M.F.A., Catholic U.
Malcolm, Janet M.; Assistant Professor of Information Science; M.S., Northwestern; Ph.D., Columbia.
Rocks, James K.; Assistant Professor of Information Science; M.A., Boston U.
Rosenberg, Marvin I.; Assistant Professor of Computer Systems; M.S., Purdue.
Weeks, David C.; Adjunct Professor of Information Science; M.A., Ph.D., U. London.
Welt, Isaac D.; Director, Scientific and Technical Information Systems Program; Professor of Information Science; M.S., McGill; Ph.D., Yale.

Students Specializing in Information Science: A portion of 543 master's and 57 doctoral candidates; some of the 800 nondegree students are probably also specializing in information science.

Information Science Courses: (credit in semester hours)

COMPUTER SYSTEMS

55.333 Computer Programming–FORTRAN (no graduate credit)
56.334 Computer Programming–COBOL (no graduate credit)
55.530 Automatic Data Processing Systems (3)
Detailed analysis and design of a large business or government computer system. Emphasis on thorough development of system rather than on hardware or component design.
55.632 Advanced Computer Applications (3)
55.633 Programming Systems and Languages (3)
55.635 Workshop in Computer Systems (3)
55.637 Workshop in Operating Systems (3)
55.730 Seminar in Computer Systems (3)

SCIENTIFIC AND TECHNICAL INFORMATION SYSTEMS

55.550 Survey of Information Science and Technology (3)
Emphasis on modern mechanized methods. Includes information theory, documentation, reprography, and computer-aided photocomposition.
55.650 Natural Language Data Processing (3)
55.651 Technical Information Machine Systems (3)
User requirements and evaluation techniques, handling of the scientific and technical literature, capabilities of mechanized systems, software developments, file organization and record formatting are emphasized.
55.653 Concepts of Abstracting and Indexing (3)
55.654 Workshops in Technical Information Handling (3)
55.655 Automated Library Systems (3)
Systems analysis is applied to the evaluation of library effectiveness, and library functions are analyzed systematically with a view toward automation. Particularly directed at practicing librarians.
55.656 Publication Techniques (3)
Careful analysis of the present state of primary journal publication with emphasis on economic factors. Computer-aided photocomposition is discussed, as are mechanized processing and abstracts and indexes.
55.750 Seminar in Scientific and Technical Information Systems (3)

MANAGEMENT INFORMATION SYSTEMS

55.511 The Systems Approach (3)
55.560 Systems Design for Business Operations (3)
55.561 Management of Automatic Data Processing Systems (3)
55.660 Management Information and Reporting Systems (3)
55.760 Seminar in Management Information Systems (3)

Institutes and Short Courses:

Annual Institute on Records Management: In cooperation with National Archives and Records Service, General Services Administration.

Institute on Technological Change and Administration in Printing, Publishing and Information Services: Intended for executives, production managers and other specialists from printing, publishing, information services, and user organizations.

Research Opportunities for Students: Approximately two-thirds of the student body is employer-sponsored. Limited government research contracts are available.

Computer Facilities: IBM 360/40 with timesharing, plus timesharing bought from commercial services.

Admission Requirements:

M.S. Candidates: Fulfillment of University requirements plus bachelor's degree from an accredited college or university.
Doctoral Candidates: Requirements specified by collaborating school.
Foreign Students: Must fulfill university requirements, including demonstrated facility in English.

Tuition and Fees: $77 per credit hour for courses taken on campus, and $50 per credit hour for courses taken off campus.

Financial Aid: Two graduate assistantships are available each year. These assistantships pay $3000 (10 months) plus tuition remission for 24 hours of graduate credit.

AUBURN UNIVERSITY
DEPARTMENT OF EDUCATIONAL MEDIA

3402 Haley Center
Auburn, Alabama 36830
(205) 826-4420

Director of Program: William E. Hug (see faculty list below).

Description of Program: The goal of the graduate program is to provide the best possible educational experience for the preparation of library media specialists. The library media specialist must understand the process of which he is a part. In order to be an integral and indispensable part of the total educational program, he must take part in the process and must be able to contribute to the program. Therefore, environments and learning experiences which are examples of the kind and quality of activity the media specialist should furnish in his own center are provided for the student. The total program is designed to build competencies in media, development and interaction of human behavior, learning and learning environment, professionalism, planning and evaluation management, and research.

Employment Preparation: Generation, input, processing, storage; systems design and management; education and research positions.

Degree:

Master of Education with a Concentration in Educational Media: A minimum of 8 hours in administration and supervision, 8 hours in foundations of education, and 32 hours in educational media. A thesis is not required.

Faculty:

Anthony, Carol; Instructor/Librarian; B.A., Cincinnati, 1938.
Beilke, Patricia; Assistant Professor; M.A., M.S.L., Ed.D., Western Michigan, 1958, 1968, 1971.
Cobb, Jane Evelyn; Graphic Artist and Instructor; B.F.A., Auburn, 1970.
Hug, William E.; Head, Department of Educational Media and Assistant Professor; B.S., Oregon, 1954; M.A., Colorado State, 1955; Ed.D., Southern California, 1969.
Klontz, Mary P.; Assistant Professor; B.S. in L.S., North Carolina, 1970.
Miles, Louise W.; Assistant Professor; M.A., George Peabody, 1951.
Miller, Thomas E.; Associate Professor; M.S., Stout Inst., 1950; Ed.D., Indiana, 1963.
Nemsik, James A.; Instructor; M.S., Ed.S., Ed.D., Indiana, 1970,1971,1971.
Sheppard, Allan N.; Assistant Professor; M.S., SUNY, 1969; Ed.D., Indiana, 1971.

Students Specializing in Information Science: No data; approximately 60 master's candidates enrolled.

Information Science Courses: (credit in quarter hours)

EM 450 Classification and Cataloging of Media (4) F,Sp,Su Klontz, Swaggart
EM 470 Cybernetic Principles of Learning Systems (4) F Hug
EM 600 Technology in Education (4) W,Su Hug
EM 650 Seminar in Educational Media (1-10) F,W,Sp,Su Miller, Hug
EM 651 Research in Educational Media (5) Sp,Su Miller, Hug
EM 654 Evaluation of Media Programs (2-5) W,Su Miller

Institutes and Short Courses: Seminar for Junior College Media Personnel; Seminar for IGE Schools, Auburn Center; a series of workshops and institutes will be offered during the next two years for students participating in Project Libra.

Research Opportunities for Students: None listed.

Computer Facilities: IBM 360/50.

Admission Requirements: A bachelor's degree from an accredited college or university; a minimum of 12 hours in educational media; a valid teaching certificate; acceptable scores on the general and advanced portions of the G.R.E.; and an acceptable undergraduate scholastic average.

Tuition and Fees: $150 per quarter (no out-of-state tuition for graduate students).

Financial Aid: Graduate assistantships are awarded by the Department of Educational Media; University fellowships are open to students in all fields.

AUBURN UNIVERSITY
ELECTRICAL ENGINEERING DEPARTMENT

207 Dunstan Hall
Auburn, Alabama 36830
(205) 826-4330

Director of Program: Chester C. Carroll; Head, Electrical Engineering (see faculty list below).

Description of Program: The Computer Science Program in the Electrical Engineering Department is a computer science-oriented curriculum.

Employment Preparation: Processing; systems design; education and research positions.

Degrees:
Master of Electrical Engineering: 48 quarter credit hours (no thesis required).
M.S. in Electrical Engineering: 45 quarter credit hours including thesis.
Ph.D. in Electrical Engineering: The number of credit hours is variable.

Faculty:
Carroll, Billy D.; Assistant Professor; B.S.E.E., M.S.E.E., Ph.D. in Electrical Engineering and Computer Science, Texas, 1964, 1966, 1969.
Carroll, Chester C.; Head, Electrical Engineering and Professor; B.S.E.E., M.S.E.E., Ph.D. in Electrical Engineering and Computer Science, Alabama, 1961, 1962, 1965.
Irwin, J. David; Assistant Professor; B.S.E.E., Auburn, 1961; M.S.E.E., Ph.D. in Electrical Engineering, Tennessee, 1962, 1967.
Nagle, H. Troy, Jr.; Assistant Professor; B.S.E.E., M.S.E.E., Alabama, 1964, 1966; Ph.D. in Electrical Engineering and Computer Science, Auburn, 1968.

Students Specializing in Information Science: No data given; 30 master's and 31 doctoral candidates enrolled.

Information Science Courses: (credit in quarter hours)
EE 640 **Digital Computing Systems** (3)
EE 641 **Multiprocessing Systems** (3) W
EE 643 **Computer Software Development** (3) Su
EE 644 **Theory of Compilers** (3) F
EE 645 **Advanced Sequential Systems** (3) Su
EE 646 **Pattern Recognition** (3) Su

Institutes and Short Courses:
Workshop on Computer Programs in Electrical Engineering Education: Jan. 15-16, 1970, sponsored by Electrical Engineering Department, Engineering Extension Service, and the COSINE Committee of the Commission on Engineering Education of the National Academy of Engineering. The workshop was intended for electrical engineering educators interested in the use of computer programs in electrical engineering education. Each participant received extensive instruction and individual help in using example programs and in writing his own programs in ECAP, PCAP, and JOBSHOP.
Computer Workshop for Engineers and Scientists: October 1970, sponsored by Electrical Engineering Department. The primary purpose of this series of workshops was to present to engineers and scientists useful knowledge of the general area of digital computers including their design and use in the scientific community. The workshops included combinatorial logic circuits, FORTRAN programming, computer organization, sequential circuits, computer architecture, error detection, and fault diagnosis. They were devoted to both the hardware and software aspects of scientific computers.

Research Opportunities for Students: Current active research is being conducted in the following digital system areas: Digital filtering, computer architecture, advanced memory systems, multiprocessing, data acquisition and distribution, fault tolerant computing, and digitized radar.

Computer Facilities: IBM 360/50; Honeywell H316.

Admission Requirements:
Master's Programs: Bachelor's degree in electrical engineering with a grade point average of 1.5 on a 3.0 point scale.
Doctoral Program: Bachelor's degree in electrical engineering with a grade point average of 2.0 on a 3.0 point scale.

Tuition and Fees: $150 per quarter.

Financial Aid: Research support, teaching assistantships, fellowships.

AUBURN UNIVERSITY
DEPARTMENT OF INDUSTRIAL ENGINEERING
Auburn, Alabama 36830
(205) 826-4340

Director of Program: Dr. George H. Brooks; Head (see faculty list below).

Description of Program: The objective of this program is to educate advanced students in systems analysis, information sciences, and management science. A graduate will be qualified to go on to Ph.D. work if he desires. He may find a position in education, government, military, or industry. He will be capable of taking a managerial problem and solving it from start to finish. He will have a good background in mathematics and statistics. In the computer area he will know the hardware generally, but primarily he will know how to use the computer. This implies knowledge of at least one and preferably two languages such as FORTRAN, COBOL, PL1, or a machine language. The curriculum is systems oriented, the main concern being efficient utilization of computers and supporting hardware.

Employment Preparation: Systems design and management.

Degree:
M.S. in Industrial Engineering: No required courses; a major of 33 hours and a minor of 12 hours. The major must include a thesis which may not count for more than 7 of the 33 hours.

Faculty:
Brooks, George H.; Head and Professor; M.S.I.E., Ph.D. in I.E., Georgia Tech., 1951, 1964.
Herring, Bruce, E.; Assistant Professor; M.S.M.E., New Mexico State, 1963.
Hool, James N.; Associate Professor; M.S.F., Ph.D. in Forestry, Purdue, 1962, 1965.
Maghsoodloo, Saeed; Assistant Professor; M.S. in Mathematics, Ph.D. in Mathematics, Auburn, 1963, 1968.
Smith, Leo Anthony; Assistant Professor; M.S.I.E., Georgia Tech., 1963; Ph.D. in I.E., Purdue, 1969.
Trucks, Louis B.; Assistant Professor; M.S.I.E., Pittsburgh, 1951; Ph.D. in I.E., Oklahoma State, 1971.
Webster, Dennis B.; Assistant Professor; M.S.I.E., West Virginia, 1966; Ph.D. in I.E., Purdue, 1969.
White, Charles R.; Associate Professor; M.S.I.E., Ph.D. in I.E., Purdue, 1957, 1963.
Zaloom, Victor Anthony; Assistant Professor; M.S.I.E., Florida, 1967; Ph.D. in I.E., Houston, 1970.

Students Specializing in Information Science: No data; 22 master's candidates enrolled.

Information Sciences Courses: (credit in quarter hours)
IE 455 Advanced Computer Programming (3)
IE 464 Man-Machine Systems II (3)
IE 471 Continuous Process Control (3)
IE 616 Industrial Dynamics (3)
IE 617 Advanced Simulation Problems (3)
IE 664 Management Information Decision Systems (3)
IE 665 Advanced Topics in Human Engineering (3)
IE 671 Discrete Process Control (3)

Institutes and Short Courses: None.

Research Opportunities for Students: Jobs are available at the Computer Center. The department has several research contracts employing students.

Computer Facilities: IBM 360/50 with 8 disk drives, 2 printers, 4 magnetic tapes and other support equipment.

Admission Requirements:
M.S.: B.S. in a hardcore science or engineering; 1.8 grade point average on a 3.0 scale; 960 on the G.R.E.
Foreign Students: English proficiency examination.

Tuition and Fees: $150 per term or $13 per credit.

Financial Aid: Fellowships are available for those who can qualify; teaching assistantships are also available.

BRADLEY UNIVERSITY
COMPUTER SCIENCE DEPARTMENT
Peoria, Illinois 61606
(309) 676-7611, ext. 372

Director of Program: Herbert A. Morris; Director (see faculty list below).

Description of Program: This is a computer science-oriented program.

Employment Preparation: Generation, input, processing, and storage of data; systems design; management.

Degree:
M.S. in Computer Science: 30 semester hours; research project and report.

Faculty:
Emanuel, Joseph J.; Ph.D. in Industrial Engineering, Ohio State.
Hammond, William M.; Associate Professor; Ph.D. in Electrical Engineering, Purdue.
Huang, Jin-Si; Instructor; M.S. in Mathematics, Virginia.
Morris, Herbert A.; Director and Associate Professor; M.A. in Mathematics, Texas.
Newton, Rita M.; Associate Professor; Ph.D. in Industrial Engineering, S.U.N.Y.

Students Specializing in Information Science: No data given; 20 master's candidates enrolled.

Information Science Courses: (credit in semester hours)
CS 509 Programming of Digital Computers (3) Huang
CS 515 Linear Programming (3) Newton
CS 516 Simulation of Man/Machine Systems (3) Newton
CS 606 Computer Operating Systems (3) Huang
CS 607 Structures of Assemblers and Compilers (3) Huang

Institutes and Short Courses: None listed.

Research Opportunities for Students: Programming at the Computer Center.

Computer Facilities: IBM 360/40.

Admission Requirements: Calculus, statistics, differential equations, and programming knowledge.

Tuition and Fees: $1900 per year.

Financial Aid: Assistantships.

UNIVERSITY OF BRITISH COLUMBIA
SCHOOL OF LIBRARIANSHIP

Vancouver 8, British Columbia, Canada
(604) 228-2404

Director of Program: Roy Stokes; M.A., Nottingham; D.L.C. (hon.), Loughborough; Fellow and Honours Diplomate of the Library Association (Great Britain).

Description of Program: The purpose of the new programme is to prepare students to deal effectively with the problems that present themselves in the administration, design and operation of library services. To provide such preparation, the programme will devote the first year to a sequence of required courses covering those aspects of professional knowledge which should be common to all librarians. In the second year, students will build on this core by specialized studies relevant to their particular background and proposed direction of professional development. In most instances, the second year will combine studies within librarianship proper with those in other university departments. As fields such as statistics, computer science, public administration, etc., impinge directly on important aspects of librarianship, students should have the opportunity of taking courses in those areas. Moreover, in line with the growing requirements for librarians to serve as literature specialists and subject bibliographers, it is desirable that students have the chance to take more courses in other departments so as to reinforce their subject knowledge.

Employment Preparation: Librarians.

Degree:

M.L.S.: A 2-year program requiring 30 units of course work (for entrants with a bachelor's degree); or 24 units (for entrants with relevant post-graduate work in another department); or 15 units (for entrants with a fifth-year B.L.S.). The work of the first year consists of 8 required courses (15 units) representing knowledge that should be common to all librarians. Field experience in a library is prerequisite for entry into the second year, in which the student concentrates in one or more of 4 main areas of specialization: Bibliography and Information Services; Library Materials; Documentation and Technical Services; Foundations; or Library Administration. He is required to take the course in Research Methods; the other courses (making a total of 15 units) constitute a tailor-made program.

Faculty:

Hagler, Ronald A.; Associate Professor; A.M.L.S., A.M., Ph.D., Michigan.
Piternick, Anne Brearley; Assistant Professor; A.L.A. (Associate, Library Association).
Simmons, Peter; Assistant Professor; M.S., Pratt Institute.

Students Specializing in Information Science: No data given; 63 full-time master's candidates enrolled in the School.

Information Science Courses: (credit in units; 15 units equal one year's work)

535 Introduction to Automation (3) Sp Simmons
Introduction to applications of computers and related equipment in library management and bibliographical analysis.

613 Non-Book Materials (1-1/2)

621 Documentation (1-1/2) F Piternick, Hagler, Simmons
Literature search by means of specialized manual and electronic indexing and retrieval methods; comparisons of methods in respect of efficacy, speed of retrieval, and costs.

622 Special Problems in Documentation (1-1/2)
Special topics in documentation: subject analysis, specification and control; indexing; abstracting.

624 Special Classification Systems (1-1/2)

626 Automation of Library Systems (1-1/2) Sp Simmons

644 Special Libraries and Information Centers (1-1/2)

Institutes and Short Courses: Institutes and short courses are held in the School. Areas of study are based on expressed professional needs. In 1971 two such were organized, Media Workshop for Librarians and Teachers, and Modern Management Techniques Applied to Libraries.

Research Opportunities for Students: Not mentioned.

Computer Facilities: Remote terminal access to University's Duplex IBM 360/67 with various peripheral equipment; direct access to unit record equipment.

Admission Requirements:

New entrants: Bachelor's degree from a recognized university with at least second class standing in the last 2 years of undergraduate study; promise of superior professional performance as attested by letters of reference and a personal interview; evidence of reading knowledge of a language other than English.

Entrants with B.L.S.: B.L.S. or equivalent from a library school accredited by the American Library Association; demonstrated superior professional performance as attested by letters of reference and a personal interview.

Foreign Students: Where native language is not English, demonstrated facility in the use of English.

Tuition and Fees: $540 per year.

Financial Aid: None listed.

UNIVERSITY OF CALIFORNIA AT BERKELEY
SCHOOL OF LIBRARIANSHIP

118 South Hall
Berkeley, California 94720
(415) 642-1464

Director of Program: Patrick Wilson; Dean and Associate Professor of Librarianship; Ph.D. in Philosophy, California at Berkeley, 1960.

Description of Program: The program is basically oriented towards two major problem areas: fundamental conceptual problems of information storage and retrieval, drawing on logic, mathematics, and linguistics; and the application of computer technology to bibliographical and library problems. It is both theoretically and library oriented.

Employment Preparation: Teaching, research and development.

Degrees:

M.L.S.: 42 quarter units including course 250; thesis not required.
D.L.S. in Librarianship and Information Science: 54 quarter units and six quarters in residence.
Ph.D. in Library and Information Science: No specific unit or course requirements; six quarters in residence required.

Faculty:

Cooper, Michael D.; Assistant Professor of Librarianship; Ph.D. in Librarianship, California at Berkeley, 1971.
Cooper, William S.; Associate Professor of Librarianship; Ph.D. in Philosophy, California at Berkeley, 1964.
Humphrey, Allan J.; Lecturer; M.A. in Mathematics, California at Berkeley, 1959.
Maron, Melvin E.; Professor of Librarianship; Ph.D. in Philosophy, California at Los Angeles, 1951.
Rosenberg, Victor; Assistant Professor of Librarianship; Ph.D. in Library Science, Chicago, 1970.
Sherman, Donald; Lecturer; M.A. in English, Johns Hopkins, 1957.
Swank, Raynard Coe; Ph.D. in Librarianship, 1944; LL.D. (hon.), College of Wooster, 1970.

Students Specializing in Information Science: Enrollment figures for information science students not available.

Information Science Courses: (credit in quarter hours)

240 Introduction to the Information Sciences (3) F Rosenberg
The library problem from the viewpoint of the information sciences, including those techniques and machines that deal with information and information processing. Relevance of the conceptual and physical tools of the information sciences to information analysis, indexing, retrieval, and dissemination.
241 Theoretical Problems in Information Transfer and Retrieval (4) F Maron, W. Cooper
Problems in the design and evaluation of automatic literature-searching and question-answering systems. Intended as a mature introduction for students with some background in logic, mathematics, and computing.
242A-B Formal Techniques for Intellectual Access (4,4) W,Sp Maron
243 Automatic Data Retrieval and Question-Answering (3) W W. Cooper
246 Measures of Retrieval Effectiveness (3) Sp W. Cooper
256 Using Computers in Advanced Bibliographic Research (3) W Sherman
273 Introduction to Library Systems Analysis (4) W,Sp Rosenberg, M. Cooper
274 Library Systems Analysis (4) Sp Rosenberg
275 Data Processing for Libraries (3) Sp Humphrey
276 Survey of Library Automation (4) Sp Sherman
A general survey of current and planned automation projects in university and public libraries and network processing centers. The MARC project and concepts of bibliographic data processing will be studied in detail.
296A Interlibrary Cooperation and Information Networks (3) Sp Swank

Institutes and Short Courses: None listed.

Research Opportunities for Students: Research assistantships in Institute of Library Research may be available.

Computer Facilities: CDC 6400; IBM 360/40.

Admission Requirements:

M.L.S. Candidates: B.A., admission to graduate standing, submission of letters of reference, and Graduate Record Examination aptitude test scores.

D.L.S. and Ph.D. Candidates: Graduation with B average from accredited library school (mav be waived for information science students).

Foreign Students: If non-English-speaking and with less than one year of study at an accredited American college or university, the T.O.E.F.L. is required.

Tuition and Fees: $233 per quarter for resident graduate students; $733 per quarter for nonresident graduate students; $741 per quarter for foreign graduate students.

Financial Aid: For 1972-73 academic year, four fellowships yielding $3,500 plus nonresident fees; research assistantships.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES
COMPUTER SCIENCE DEPARTMENT

Room 3731K Boelter Hall
Los Angeles, California 90024
(213) 825-2212

Director of Program: Michel A. Melkanoff; Head, Computer Science Department (see faculty list below).

Description of Program: This is a computer science-oriented curriculum which includes four basic areas. Theory includes theoretical models in computer science; automata theory; formal grammars; computability and decidability; pattern recognition; automatic deduction; and queuing theory. Methodology includes simulation; information storage and retrieval; file management; numerical analysis; optimization; and analog and hybrid computers. System design includes computer system architecture; digital systems; logic design; memory, arithmetic, control, data transmission and input/output systems design; and computer graphics. Programming languages and systems include general and special purpose programming languages; compilers; system programming; syntax, semantics and pragmatics of programming languages.

Employment Preparation: Input, processing, and storage of information; systems design; education and research positions.

Degrees:
M.S. in Computer Science: 9 courses (36 quarter hours) plus thesis or comprehensive examination.
Ph.D. in Computer Science: Examinations and dissertation (no formal courses required *per se*).

Faculty:
Avizienis, Algirdas A.; Associate Professor; Ph.D., Illinois, 1960.
Bussell, Bertram; Associate Professor; Ph.D., California at Los Angeles, 1962.
Cardenas, Alfonso F.; Assistant Professor; Ph.D., California at Los Angeles, 1968.
Chu, Wesley W.; Assistant Professor; Ph.D., Stanford, 1966.
Karplus, Walter J.; Professor; Ph.D., California at Los Angeles, 1954.
Kleinrock, Leonard; Professor; Ph.D.E.E., M.I.T., 1963.
Klinger, Allen; Assistant Professor; Ph.D., California at Berkeley, 1966.
Luckham, David C.; Associate Professor; Ph.D., M.I.T., 1963.
Martin, David F.; Assistant Professor; Ph.D., California at Los Angeles, 1966.
Melkanoff, Michel A.; Head, Computer Science Department and Professor; Ph.D. in Physics, California at Los Angeles, 1955.
Muntz, Richard R.; Assistant Professor; Ph.D., Princeton, 1969.
Svoboda, Antonin; Professor; Doctor of Technical Sciences in Electrical Engineering, Technical University, Prague, 1936.

Students Specializing in Information Science: No data given; 98 master's and 61 Ph.D. candidates enrolled.

Information Science Courses: (credit in quarter hours)
E100D Information Processing Systems (4) Avizienis, Bussell
E123A Basic Structures for Data Representation (4) Melkanoff, Muntz
E123B Theoretical Models in Computer Science (4) Martin, Muntz
E124D Interfacing Digital Computers with External Systems (4) Karplus
E125L Programming Languages and Systems (4) Cardenas, Melkanoff
E125N Compiler Construction (4) Martin
E126C Systems Programming (4) Muntz, Martin
E223E Heuristic Programming and Artificial Intelligence (4) Luckham, Melkanoff
E224A Continuous Systems Simulation (4) Karplus
E225K Advanced Topics in Programming Languages (4) Martin, Melkanoff
E225L Advanced Topics in Programming Systems (4) Martin
E225M Pattern Recognition (4) Klinger, Melkanoff
E226D Data Management Systems (4) Cardenas, Melkanoff
E226R Computers, Science and Society (4) Melkanoff, Sackman
E298 Data Transmission in Computer Systems (4) Chu

Institutes and Short Courses: None listed.

Research Opportunities for Students: Numerous federal government contracts.

Computer Facilities: IBM 360/91; XDS Sigma 7; XDS 920.

Admission Requirements:
M.S. in Computer Science: Normal University requirements.
Ph.D. in Computer Science: Normal University requirements.
Foreign Students: G.R.E.

Tuition and Fees: Nonresident tuition $500 per quarter; registration fee $100 per quarter; educational fee $100 per quarter.

Financial Aid: Various fellowships, teaching assistantships and research assistantships.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES
GRADUATE SCHOOL OF LIBRARY SERVICE

405 Hilgard Avenue
Los Angeles, California 90024
(213) 825-4351

Director of Program: Andrew H. Horn, Dean of the School

Description of Program: The program leading to the degree Master of Science is an integrated course of study and research in the theoretical foundations of information handling. It is intended to prepare "information scientists"–i.e., persons dealing with the general problems of information handling *per se* rather than application to a specific discipline. The student is required to gain a working knowledge of the mathematics required for systems design and evaluation. He is required to gain familiarity with the basic professional competencies of librarians, and an understanding of the role of libraries in information dissemination. He is required to learn the techniques of management, including cost accounting, as they apply to information activities. He is required to gain proficiency in computer programming. He is required to write a thesis representing an original contribution to the field of information science. The course program is interdisciplinary and usually requires two academic years of full-time residence.

The program leading to the post-M.L.S. Certificate is an integrated course of study, internship, and research in information systems analysis and design, information retrieval systems, library data processing, and library management. Students are also expected to acquire a working knowledge of the calculus and of computer programming if they do not have these competencies prior to admission. A research paper is required. The course program is interdisciplinary and usually requires at least one academic year of full-time residence.

Employment Preparation: Integrative positions, such as systems design and management; education and research positions.

Degrees:

M.S. in Information Science (Documentation): The courses and number of courses required will depend upon the previous relevant study and experience of the student. There is no rigid course or credit hour requirement. A reading knowledge of one modern foreign language (preferably French, German, Russian) is required.

Certificate of Specialization in Library Science in the Field of Systems Analysis and Information: Post-M.L.S. level. See above for requirements.

Faculty: Faculty members who participate in the program (i.e., teaching and/or directing research) are drawn from various schools and departments of the University, for example: Graduate School of Management, School of Engineering, Program in Computer Science, Department of Mathematics, School of Journalism, Department of English, Department of Philosophy, Department of Psychology, School of Public Health. All faculty members of the School of Library Service also participate in the program, but the following are most directly concerned: Harold Borko, Ph.D. in Psychology and Psychometrics; Kelley Cartwright, M.L.S.; Robert L. Collison, F.L.A.; Louise Darling, M.A. in Botany; G. Edward Evans, Ph.D. in Library Science; Robert M. Hayes, Ph.D. in Mathematics; Andrew H. Horn, Ph.D. in History; Johanna E. Tallman, B.A. and C.L. Dr. Borko and Dr. Hayes are program advisors.

Students Specializing in Information Science: A portion of the approximately 115 graduate students enrolled in the School.

Information Science Courses: In the School of Library Service and in other departments of the University there are over 100 courses which impart competence in the field of information science. Courses and programs are under constant revision. Therefore, for the latest information, address inquiries concerning courses to the Dean of the School.

Institutes and Short Courses: Address inquiries concerning courses to the Dean of the School.

Research Opportunities for Students: Research resources and opportunities are available.

Computer Facilities: Computer facilities (including two IBM 360/91 installations and other smaller IBM installations) are available.

Tuition and Fees: Address inquiries to the Dean of the School. Fees are subject to change without notice; nonresidents of California must pay a tuition fee.

Financial Aid: No financial aid is assured. Address inquiries to the Dean of the School.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES
GRADUATE TRAINING PROGRAM IN MEDICAL LIBRARIANSHIP

Biomedical Library
Center for the Health Sciences
Los Angeles, California 90024
(213) 825-5781

Director of Program: Miss Louise Darling, lecturer in Graduate School of Library Service; M.A. in Botany, California at Berkeley, 1935; Certificate in Librarianship, California at Berkeley, 1936.

Description of Program: Recent graduates of accredited library schools, or those with a master's degree in a related area of information science, are equipped for positions at the middle level of responsibility in larger health science libraries and information centers or for full responsibility in smaller libraries. Trainees are given firsthand acquaintance with all operations characteristic of health science libraries so that they can determine the area or areas in which they function best and at the same time gain an appreciation of the way in which the various areas fit together for a successful whole. Trainees are stimulated to acquire permanent patterns for keeping abreast of new developments in science information work so that they will be alert in their future careers for opportunities to apply innovations and, where abilities and interests coincide, to seek chances to investigate on their own.

Employment Preparation: Middle managers and specialists.

Degree:
Post-Master's Certificate of Specializiation: Average of 10-12 units per quarter for 3 quarters of academic year. Courses may be selected from the fields of natural science, information science, behavioral sciences, history of medicine, and languages. Upon completion of traineeship, interns are eligible for M.L.A. (Medical Library Association) certification at level II.

Faculty: Not listed.

Students Enrolled: Four nondegree students.

Information Science Courses:
Library Service 240 Information Systems Analysis and Design
Library Service 241 Management Information Systems
Library Service 243 Data Base Systems
Library Service 440 Data Processing in the Library
Library Service 491 Health Sciences Library Internship (20-25 hours per week for three quarters; full-time September, July, and August without course credit)
Trainees are assigned on a rotating basis to all of the library's divisions. They also spend one month in the History and Special Collections Division, two weeks in the Pacific Southwest Regional Medical Library and MEDLARS Search Station, and two weeks in the Brain Information Service where they are introduced to glossary problems, indexing philosophy, formulation of machine searches, and comparison of machine and manual searches.
Business Administration 113A Electronic Computers in Business
An introduction to electronic computers and computer programming with substantial laboratory work in problem solving using computers and both machine language and FORTRAN.
Business Administration 113B Electronic Computer Methods
A continuation of 113 A with emphasis upon solving problems related to business and general social sciences with such languages as COBOL for data processing, IPL for list processing and others.

Institutes and Short Courses: The workshops, institutes, etc., differ each year and the trainee is eligible to attend any that are of value and interest to the program.

Research Opportunities for Students: With the approval of the Dean of the Graduate School of Library Service and the Program Director, the students may engage in any research activity of interest and value to the medical library field. (Example: Project Feasibility Study for computerized selective dissemination of information in the Brain Information Service).

Computer Facilities: Center for the Health Sciences Computer Facility.

Admission Requirements: M.L.S. from an A.L.A.-accredited library school. Preferably, a background in the natural sciences or information science. Program is limited to U.S. citizens.

Tuition and Fees: Tuition and all fees paid by the U.S. Public Health Service Training Grant.

Financial Aid: Trainee receives U.S.P.H.S. stipend in the amount of $3800 plus fees and tuition.

CASE WESTERN RESERVE UNIVERSITY
SCHOOL OF LIBRARY SCIENCE

University Circle
Cleveland, Ohio 44106
(216) 368-3500

Director of Program: William Goffman; Dean (see faculty list below).

Description of Program: The specialization in information science at the master's level includes the theory and methodology of systems analysis, opportunity for electives in allied disciplines and opportunity to engage in research.

The doctoral program is a research-oriented program which operates along interdisciplinary lines and is based firmly in information science. While it is chiefly a theoretically oriented curriculum, there is also possibility to pursue the study of systems analysis, the design and analysis of information systems, etc.

Employment Preparation: Students at the master's level are preparing for specialist and middle management positions. Doctoral students are preparing for teaching and research.

Degrees:
M.S. in L.S. with Specialization in Information Science: 36 semester hours, including 33 required hours: L.S. 500, 521, 537, 572, 573, 574, 575, 576, 578, and 584 or 586 or 588. No thesis is required.
Ph.D.: This degree is awarded through the School of Graduate Studies of the University. 78 semester hours, covering a three-year period of graduate study, must be completed. Beyond the minimum, actual hour requirements and courses will vary according to the individual's preparation and objectives.

Faculty:
Booth, A.D.; Visiting Professor of Library and Information Science; Ph.D., Birmingham, 1944; D.Sc., London, 1951.
Cheshier, Robert G.; Assistant Professor; M.A.L.S., U. Washington, 1963.
Goffman, William; Dean and Professor; Ph.D., Michigan, 1954.
Hazelton, Robert S.; Instructor; M.A., Case Inst., 1967.

Overmyer, LaVahn M.; Associate Professor; M.S., New York U., 1937.
Rawski, Conrad H.; Professor; Ph.D., Vienna, 1937; M.S. in L.S., Western Reserve, 1957.
Rees, Allan M.; Professor; M.S. in L.S., Western Reserve, 1956.
Richmond, Phyllis A.; Professor; Ph.D., Pennsylvania, 1949; M.S. in L.S., Western Reserve, 1956.
Saracevic, Tefko; Associate Professor; M.S. in L.S., Ph.D., Case Western Reserve, 1962, 1970.
Shera, Jesse H.; Professor; A.M., Yale, 1927; Ph.D., Chicago, 1944.

Students Specializing in Information Science: 31 master's candidates specializing in information science, one of the five major fields within librarianship recognized by this School.

Information Science Courses: (credit in semester hours)

524 Introduction to Information Science (3) F Saracevic
Designed to familiarize students not in the information science program with the subject content, orientations, methodologies and major works in information science. Emphasis is on surveying the research literature; the practical aspects of information retrieval, including the application of information technology; and examining the relationships to librarianship.
538 Advanced Cataloging and Classification (3) Richmond
540 History and Theory of Classification (3) Shera
571 Computer Programming for Information Retrieval (3) Hazelton
572 Automation of Library Processes (3) F,Sp Overmyer
573 Information Retrieval Systems (3) F Saracevic
Study of the environment, purpose, structure, and operations of information retrieval systems. Includes communication processes; user studies and relevance; functions of acquisition, information representation, file organization, question analysis and searching, and dissemination; performance studies; relations to library systems.
574 Information Retrieval Systems Laboratory (3) Sp Saracevic
Experiments are designed and executed by students in a laboratory setting, utilizing previous experimental work in the field. Methodologies for testing and evaluation are applied, and test results are critically examined. Generalizations to libraries, library practice and library processes.
575 Information Processing on Computers (3) F Hazelton
Historical review of computer developments, functions, and organization of computers. Punched card systems and stored-program computers surveyed in terms of information retrieval, scientific and business applications. Principles of programming, systems organization, and symbol manipulation, with emphasis on application of high speed computers.
576 Automatic Language Processing (3)
577 Introduction to Information Retrieval Theory (3) Sp Goffman
An elementary treatment of certain mathematical tools needed in the construction of abstract theories and models in the field of information retrieval. Application of these tools to the design and evaluation of retrieval systems.
578 Specialized Information Centers and Services (3) F Rees
579 Computers in the Humanities (3) F Richmond
Survey of current use of computers for processing of nonnumeric information. Emphasis is on types of work that can be computerized rather than on specific techniques. Scope includes language and literature, religion, philosophy, music, visual arts, history and allied subjects, anthropology, archaeology, classics and museum networks.
611 Mathematical Methods for Information Science (3-6) Goffman
612 Mathematical Methods for Information Science (3-6) Booth, Goffman
640 Theory of Classification. Part I (3) F Richmond, Shera
641 Theory of Classification. Part II (3) Sp Richmond, Shera
671 Computer Design of Information Systems (3) Booth
672 Modeling in Library and Information Science (3) F,Sp Goffman
673 Systems Analysis in Information Science (3) F Goffman
674 Self-Organizing Systems (3) Sp Hazelton
The design and use of heuristic programs in game playing, problem solving, and question answering, emphasizing the implications of artificial intelligence in information science.

Institutes and Short Courses: Seminars are offered within the Intersession in January of each year. During this Intersession students, in consultation with faculty, may elect to pursue independently some aspect of library or information science; to develop a group study program; or to participate in such special programs as may be suggested by the faculty. Typical activities have been in-depth studies of library automation, film selection and evaluation, and the structure of subject-matter literatures.

Research Opportunities for Students: Various current research programs and research problems in a number of university libraries offer opportunities for students; student research can also be carried out in cooperation with the Computer Department, School of Management, School of Medicine, or School of Engineering.

Computer Facilities: UNIVAC 1108.

Admission Requirements:

Master's Program: Applicant must be a graduate of an approved college or university, and must have a better than average scholarship record, basic familiarity with the use of libraries and library materials, and a reading knowledge of one modern foreign language. A personal interview with a faculty member or authorized representative of the school and the G.R.E. (aptitude tests and one advanced test) are also required.

Doctoral Program: Applicant must have earned, at an accredited institution, a master's degree in library science, a subject discipline, or engineering. Professional experience is desirable. All applicants must fulfill the admission requirements of the School of Graduate Studies. Students without adequate background in research methodology must complete L.S. 500, 580, and one other course in the 500 series. When necessary, further requirements are stated by the coordinator of the Ph.D. program.

Tuition and Fees:

Master's Program: 1-8 hours, $85 a credit hour; 9 hours or more, $1025 per semester. Additional fees include a lab fee of $1 per credit hour, health service fee of $35 required of full-time students and those living in University residence halls, and a graduation fee of $18.

Doctoral Program: 1-11 hours, $99 per credit hour; 12 or more hours, $1193 per semester. Additional health service fee of $35 per semester, and graduation fee of $70.

Financial Aid: A limited number of scholarships, fellowships, and assistantships for qualified full-time students in the master's program ($100 to full tuition); federal grants for the Medical Library Training Program and the Doctoral Program.

UNIVERSITY OF CHICAGO
COMMITTEE ON INFORMATION SCIENCES

5640 S. Ellis Avenue
Chicago, Illinois 60637
(312) 753-8762

Director of Program: Dr. Robert L. Ashenhurst; Chairman (see faculty list below).

Description of Program: The Committee on Information Sciences offers graduate programs in the general area of computers, systems, communication, and control. Master's-level courses cover both theoretical foundations and some of the more pragmatic aspects of computer systems and applications. The intention is to emphasize principles of broad and continuing applicability, thereby providing students with a strong scientifically oriented background into which specific technological information can be readily assimilated. The doctoral program is flexible, and might appropriately include courses offered by the departments of Mathematics, Statistics, Theoretical Biology, Philosophy, and Linguistics; the Graduate School of Business; and the Graduate Library School. Interdisciplinary dissertation research is facilitated by associations, through joint appointments and other means, between the Committee and other University units.

Courses more oriented toward libraries and information retrieval are offered by the Graduate Library School; see entry this directory.

Employment Preparation: Programming and system design positions; management; education and research positions at doctoral level.

Degrees:

S.M. in Information Sciences: 11 courses (4 quarters of work at 3 courses per quarter), at the level of IS 310 or above; 8 (the core courses) are in the following 5 categories: continuous systems, discrete systems, optimization and evaluation, data structures and algorithmic languages, and computer systems. The remaining 3 courses (the elective sequence) should reflect a special interest in theoretical methodologies, applications methodologies, or in a related subject. A comprehensive examination, which may consist of written and oral parts, covers the core courses. Employment experience is encouraged.

Ph.D. in Information Sciences: Qualifying examination; a program of advanced study including at least 5 courses beyond the master's level; reading knowledge of technical literature in a modern foreign language, preferably Russian; demonstration of familiarity with computer applications, by employment or by involvement in teaching or training; dissertation, defense of dissertation in an open seminar.

Faculty:

Ashenhurst, Robert L.; Chairman and Professor of Information Science; Ph.D. in Applied Mathematics, Harvard, 1956.
Daley, Robert P.; Assistant Professor of Information Science; Ph.D. in Mathematics, Carnegie-Mellon, 1971.
Goguen, Joseph A., Jr.; Assistant Professor of Information Science; Ph.D. in Mathematics, California at Berkeley, 1968.
Goldstine, Jonathan; Assistant Professor of Information Science; Ph.D. in Mathematics, California at Berkeley, 1970.
Graves, Robert L.; Professor of Applied Mathematics; Ph.D. in Mathematics, Harvard, 1952.
Greene, Peter H.; Associate Professor of Theoretical Biology and Information Science; Ph.D. in Mathematical Biology, Chicago, 1958.
Harris, Frederick H.; Lecturer; Director, Computation Center; A.M. in Physics, Rice, 1969.
Miller, Richard H.; Associate Professor of Astronomy and Information Science; Ph.D. in Physics, Chicago, 1957.
Orden, Alex; Professor of Applied Mathematics; Ph.D. in Mathematics, M.I.T., 1950.
Schrage, Linus E.; Associate Professor of Applied Mathematics; Ph.D. in Operations Research, Cornell, 1966.
Weil, Roman L.; Associate Professor of Management and Information Sciences; Ph.D. in Economics, Carnegie-Mellon, 1966.
Yngve, Victor H.; Professor of Information Science; Ph.D. in Physics, Chicago, 1953.

Students Specializing in Information Science: Approximately 40 master's and 12 doctoral candidates.

Information Science Courses:

310 Organization of Computer Systems
321 Information Theory (Statistics 317)
322 Information and Communication Theories
326 Theory of Automata
340 Formal Languages
341 Computer Operating Systems
360 Data Structures
361 Compiler Construction
371 Introduction to Cognitive Systems (Theoretical Biology 365, New Collegiate Division 265)
375 Science of Communication (Linguistics 455, Library Science 404)
376 Mechanical Translation and Language Processing (Library Science 405, Linguistics 457)
383 Information Retrieval (Library Science 406)
385 Information Systems (Business 376)
400 Reading and Research in the Information Sciences

Institutes and Short Courses: None listed.

Research Opportunities for Students: Research support by National Science Foundation, Office of Naval Research, and National Aeronautics and Space Administration.

Computer Facilities: Maniac III system in Institute for Computer Research; 360/65 system at University Computation Center.

Admission Requirements:

S.M.: Background in mathematics through linear and modern algebra, statistics and probability; elementary computing. Should take G.R.E., special topic mathematics preferably.

Ph.D.: Essentially must have satisfied or be prepared to satisfy requirements of S.M. program.

Foreign Students: G.R.E. as above, plus T.O.E.F.L.

Tuition and Fees: $875 per quarter.

Financial Aid: Scholarships, fellowships, teaching or research assistantships available to limited degree; assistantships pay equivalent of $300 per month stipend, and holders are eligible for award of tuition scholarships.

UNIVERSITY OF CHICAGO
GRADUATE LIBRARY SCHOOL

Chicago, Illinois 60637
(312) 753-3480

Director of Program: Don R. Swanson; Dean (see faculty list below).

Description of Program: Various courses related to information science, broadly defined, are offered within the context of a program in librarianship. The library school has no designated or separate program, as such, in information science. The study of users and audiences, and the planning of systems and networks of libraries and information services receive emphasis. A separate degree program, more advanced in its mathematical level, is offered by the Committee on Information Sciences. The courses which it offers may be taken for credit in the Graduate Library School. (See listing, this directory.)

Employment Preparation: Librarianship; library management, education, and research.

Degrees:

A.M. in Library Science: 15 one-quarter courses, including 6 required courses; comprehensive examination; thesis; and demonstration of reading competence in one or two foreign languages.

Certificate of Advanced Study: 3 quarters (9 courses) beyond master's degree.

Ph.D.: Minimum of 3 quarters beyond the master's degree; written examination on general librarianship; written examination on research methods and field of specialization; evidence of reading knowledge of two foreign languages; preliminary oral examination; dissertation; and final oral examination.

Faculty:

Bookstein, Abraham; Assistant Professor of Library Science; M.S., California, 1966; Ph.D. in Physics, Yeshiva U., 1969; M.A. in Library Science, Chicago, 1970.
Fussler, Herman, H.; Professor of Library Science; A.M., Ph.D. in Library Science, Chicago, 1941, 1948.
Orden, Alex; Professor of Applied Mathematics; S.M., Michigan, 1938; Ph.D., M.I.T., 1950.
Swanson, Don R.; Dean and Professor of Library Science; M.A. in Physics, Rice, 1947; Ph.D. in Physics, California, 1952.
Virgo, Julie A.; Lecturer; A.M. in Library Science, Chicago, 1968.
Yngve, Victor H.; Professor of Information Science; S.M. in Physics, Ph.D. in Physics, Chicago, 1950, 1953.

Students Specializing in Information Science: No data given; total enrollment in School, approximately 120.

Information Science Courses:

308 **Library Systems Planning I** W Swanson
309 **Library Systems Planning II** Sp Swanson
315 **Basic Mathematics for Information Science** F Bookstein
318 **Language, Symbolic Processes, and Computers** F Yngve
388 **Managerial Systems Analysis** Sp Orden
403 **Theories of Indexing and Information Retrieval** F Swanson
404 **Science of Communications** W Yngve
The study of how people use language to communicate. A discussion of relevant topics from linguistics, psychology, information science, and other disciplines. The concept of state of mind, mathematical and computer models, research methods.
405 **Mechanical Translation and Language Processing** Sp Yngve
406 **Information Storage and Searching** Su Bookstein
407 **Seminar: Research Methods in Information Retrieval** Bookstein
411 **Problems in Library and Personal Information Processing** Yngve
An exploration of one or more individually selected topics in library and information systems with a focus on the user, his needs and behavior, or on certain facets of mechanization.
417 **Communication Among Scientists** Virgo
451 **Quantitative Research Methods** Bookstein
Methodology of science. Difficulty of applying scientific methods in social sciences. Role of models in guiding data collection and interpretation of results. Possible approaches, e.g., historical, interview, questionnaires. Random samples. Introduction to statistical decision theory. Path analyses.
456 **Operations Research for Libraries** Bookstein

Institutes and Short Courses: Annual conferences, each of which develops some special aspect of librarianship, supported by grants from the Fels Foundation.

Research Opportunities for Students: Opportunity for research on various projects; some are supported by grants from the National Science Foundation and from the National Library of Medicine.

Computer Facilities: Various, including an IBM 360/65 and a 7094 at the University Computation Center.

Admission Requirements: A bachelor's degree, or substantially equivalent undergraduate preparation, and acceptable performance on the G.R.E. aptitude tests are required for admission to the School. In addition, admissibility is judged by the faculty on an individual basis–taking into account recommendations and the student's own statement of objectives and apparent motivation. A personal interview is desirable but not required. No prior library experience or training is necessary.

Tuition and Fees: $875 per quarter, full-time; application fee $15.

Financial Aid: Limited numbers of scholarships and research assistantships are offered. Loans are available to most applicants.

COLUMBIA UNIVERSITY
SCHOOL OF LIBRARY SERVICE

516 Butler Library
New York, New York 10027
(212) 280-2292

Director of Program: Theodore C. Hines (see faculty list below).

Description of Program: The information science program is one area of specialization within the regular library science curriculum. Newer technical developments are considered to be an integral part of librarianship, and these are regularly included in all basic and advanced courses whenever this is both possible and relevant. Because of the integration of information science and librarianship, course lists do not fully indicate the range and depth of work in information science in the School. Prospective students are invited to talk with faculty. A check of faculty bibliographies may also be helpful.

Employment Preparation:

Master's Program: Careers in all types of libraries–public, school, academic, and special–and in such related occupations as archival management, information science, and many kinds of research.

Doctoral Program: The planning, direction, conduct, and evaluation of research in librarianship and information science.

Degrees:

M.S.: Twelve courses (36 semester hours) including five basic required courses. No thesis.

D.L.S.: Ten courses; Research Methods and Research Seminar required.

Faculty:

Barnett, Michael P.; Lecturer in Library Service; Ph.D., London, 1952.
Harris, Jessica L.; Assistant Professor of Library Service; M.S., D.L.S., Columbia, 1965, 1969.
Hines, Theodore C.; Associate Professor of Library Service; M.L.S., Ph.D., Rutgers, 1958, 1961.

Students Specializing in Information Science: No figures separate from library science.

Information Science Courses: (credit in semester hours)

LS K6095x or y Survey of Multi-Media Materials, Facilities, and Services in Libraries (3) F,Sp

LS K6123x Computers and Librarianship (3)
An introduction to programming in a stylized subset of English, with applications to text processing and information systems. Primarily for library service and humanities students.

LS K6124y Mathematics for Librarianship (3)

LS K6171y Non-Print Resources in Media Centers (3) Sp

LS K6321y or S6321G Indexing (3)

LS K6391y Photoreproduction of Library Materials (3)

LS K8033x or S8033G Information Systems (3)
A survey of documentation programs and information systems, and their implications for traditional librarianship.

LS S8061G Automation in Educational Media Centers (3)

LS K8041x or y, or S8041G Advanced Cataloging and Classification (3) F,Sp,Su

LS S8051G Non-Print Media and Social Issues in Libraries (3) Su
The role and responsibility of libraries in evaluating, selecting, disseminating, programming, and producing nonprint media related to current social concerns.

LS K9033y Seminar in the Theory of Information Control (3)

Institutes and Short Courses: Workshops, institutes, and conferences are offered. Usually no academic credit is given. Such programs are intended primarily for practicing libraries interested in studying newer developments in library service and in extending their knowledge of a specialized field.

Research Opportunities for Students: Ongoing projects in indexing, classification research, and computer-based information control. Course credit for individual student projects in information science. Broad range of computer programs available.

Computer Facilities: Columbia University Computer Center has IBM 360/75-91, linked. School terminal, keypunches.

Admission Requirements:
Master's Program: B.A., 2 years of modern foreign language, good academic record, G.R.E.
Doctoral Program: Master's degree in any appropriate field; two foreign languages (statistics or a computer language may be substituted); G.R.E.; scholastic and research ability.
Foreign Students: Same plus clearly demonstrated competency in reading, writing, and speaking English.

Tuition and Fees: $90 per semester hour.

Financial Aid: Scholarships, teaching assistantships, and loans.

CORNELL UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE

Upson Hall
Ithaca, New York 14850
(607) 256-2369

Director of Program: Gerard Salton (see faculty list below).

Description of Program: At Cornell, computer science is concerned with fundamental knowledge in automata, computability, and programming languages and systems programming, as well as with subjects such as numerical analysis and information processing which underlie broad areas of computer applications. Because of the wide implications of research in the field, the Department of Computer Science is organized as an intercollege department in the College of Arts and Sciences and the College of Engineering.

Employment Preparation: Systems programming; programming management; college-university teaching; university and industrial research.

Degrees:
M.A. in Computer Science: 1½ years of residence credit (no specified number of courses). Thesis required.
Ph.D. in Computer Science: 3 years of residence credit; passing of stiff qualifying exams; good Ph.D. dissertation (no specific number of courses).

Faculty:
Conway, Richard W.; Professor; Ph.D., Cornell, 1958; digital simulation, management information systems.
Gries, David; Associate Professor; Dr. rer. nat., Technischen Hochschule, Munich, 1966; programming languages and compiler theory.
Horowitz, E.; Assistant Professor; Ph.D., Wisconsin, 1970; symbol manipulation.
Salton, Gerard; Chairman and Professor; Ph.D., Harvard, 1958; information organization and retrieval.
Williams, John H.; Assistant Professor; Ph.D., Wisconsin, 1969; programming languages.

MEMBERS OF OTHER DEPARTMENTS WHO ARE ALSO
FACULTY MEMBERS OF THE FIELD OF COMPUTER SCIENCE

Block, Henry; Professor of Theoretical and Applied Mechanics; Ph.D., Iowa State; theory of automata, pattern recognition.
Merriam, Charles; Professor of Electrical Engineering; Ph.D., M.I.T.; systems and control theory.
Pottle, Christopher; Associate Professor of Electrical Engineering and of Computer Science; Ph.D., Illinois; signal processing, systems theory.

Students Specializing in Information Science: 10 master's and 37 Ph.D. candidates are enrolled in the Department.

Information Science Courses: (credit in semester hours)
401 **Introduction to Computer Systems and Organization** (4) F,Sp
404 **Advanced Computer Programming** (4) Sp (Not offered in 1971-72.)
409 **Data Structures** (4) F
411 **Programming Languages** (4) F
412 **Translator Writing** (4) Sp
413 **Systems Programming and Operating Systems** (4) F
435 **Information Organization and Retrieval** (4) Sp
485 **Theory of Automata I** (4) F
486 **Theory of Automata II** (4) Sp
487 **Formal Languages** (4) F
517 **Picture Processing** (4) Sp
611 **Seminar in Programming** (4) F,Sp
635 **Seminar in Information Organization and Retrieval** (4) F
681 **Seminar in Automata Theory** (4) F,Sp
IE 9580 **Digital Systems Simulation** (3) F
IE 9582 **Data Processing Systems** (3) F

Institutes and Short Courses: None listed.

Research Opportunities for Students: Substantial research grants in theory of computing, software systems, information organization and retrieval, and numerical analysis.

Computer Facilities: IBM 360/65.

Admission Requirements: A very good undergraduate education with at least a B average. Substantial programming experience.

Tuition and Fees: $2800 per year.

Financial Aid: 20 teaching assistantships; 15 research assistantships; fellowships.

DALHOUSIE UNIVERSITY
SCHOOL OF LIBRARY SERVICE

Halifax, Nova Scotia, Canada
(902) 424-3656/7/8/9

Director of Program: J.C. Harrison; Director and Professor; M.S., Illinois, 1961.

Description of Program: The curriculum of the library school is designed to provide the student with a functional competence in library practice together with a grounding in both automation skills and an acquaintance with system analysis.

Employment Preparation: Cataloging–generation of library data records; acquisition–input of documents and financial information; technical processing of library materials; circulation and storage of library materials; management of libraries with emphasis on systems design concepts.

Degree:

M.L.S.: a minimum of twelve courses plus supervised work in a library in accordance with the requirements in the School's bulletin. Thesis not compulsory.

Faculty:

Damtoft, Finn; Assistant to the Director of Communications Services and Acting Director of A-V Services, Killam Library; B.L.S., British Columbia, 1965.

Oxley, John Howard; Systems Planner, Killam Library; M.A. in Philosophy, Rochester, 1967.

Vagianos, Louis; Director of Communications Services and Professor; M.S.L., Western Reserve, 1960; M.A. in Education, Suffolk, 1962.

Students Specializing in Information Science: A portion of the 50 students enrolled in the School.

Information Science Courses: (credit in semester hours)

L.S. 104 Systems Analysis (3) F

L.S. 207 Machines and Libraries (3) W,Sp,Su

The course is designed to explore the characteristics of machines and equipment in relation to the development of methods for the processing of information. Only problems applicable to library situations will be discussed, including data processing and information retrieval techniques.

In addition, courses are available through the Computer Centre both for credit and noncredit.

Institutes and Short Courses: None listed.

Research Opportunities for Students: The research activities for students are self-contained within the School.

Computer Facilities: A Control Data system with 49K of 60-bit words.

Admission Requirements:

M.L.S.: A bachelor's degree, with at least second class standing, from a recognized university. Have had the equivalent of two years university-level study in a foreign language, or be able to demonstrate a reading knowledge of a foreign language.

Foreign Students: Candidates whose native language is other than English must have a working as well as a reading knowledge of English.

Tuition and Fees: $1500 per year.

Financial Aid: External scholarships–$1200; University scholarships–$800 to $1000.

UNIVERSITY OF DAYTON
GRADUATE PROGRAM IN INFORMATION SCIENCE

Department of Psychology
Dayton, Ohio 45409
(513) 229-4116

Director of Program: Dr. Samuel M. Bower; Ph.D. in Psychology, Vanderbilt, 1963.

Description of Program: Because this program is currently under intensive study, details are not yet available.

Degree: M.S. in Information Science.

UNIVERSITY OF DENVER
GRADUATE SCHOOL OF LIBRARIANSHIP

University Park
Denver, Colorado 80210
(303) 753-2557

Director of Program: Margaret Knox Goggin; Dean and Professor of Library Science; B.S. in L.S., George Peabody; M.S. in L.S., Ph.D., Illinois.

Description of Program: The information science program at the University of Denver, in its first stages of development, aims to develop, within the student, problem recognition and solving ability, administrative and systems analytic ability, and the recognition and use of structural characteristics common to all fields of knowledge. Course offerings at present are library and systems oriented.

Employment Preparation: Specialists, systems designers, and managers.

Degrees:

M.A.: Fifteen quarter hours (4 courses) of prerequisites; 45 quarter hours beyond the prerequisite courses; at least three quarters of resident study; at least a B average; completion of a research paper (although no true thesis is required); and a written and/or oral comprehensive examination.

Certificate of Advanced Studies: The program is designed to meet individual students' requirements. At least 23 of the required 45 quarter hours of full-time resident study must be taken in the Graduate School of Librarianship. Students may specialize in administration, information science, or librarianship; a special program in environmental studies is also offered.

Faculty:

Green, Jay O.; Research Physicist, U. Denver Research Institute; B.S., Nebraska State.
Hamdy, Mohamed N.; Associate Professor of Library Science; M.A., Minnesota; Advanced Certificate, Pittsburgh.
Svenonius, Elaine F.; Director of Center for Communication and Information Research and Assistant Professor of Library Science; M.A. in Philosophy, Pennsylvania; M.A. in Library Science, Ph.D., Chicago.
Swanson, Rowena W.; Professor of Library Science; J.D., George Washington U.
Whitby, Thomas J.; Associate Professor of Library Science; M.A. in Library Science, Chicago.

Students Specializing in Information Science: A portion of the approximately 230 students enrolled in the School.

Information Science Courses: (credit in quarter hours)

97-420.5 Subject Analysis: Theories and Systems (3) Sp,Su
Classification: history and theory; use in both storage of materials on the shelves and retrieval of those materials through the catalog. Subject headings as catalog retrieval device: theory, current practice and new directions; relationship with other uses of term headings.

97.423 Datamation (2)
Automation and data processing as a method of bibliographical control; data processing machines and equipment, computers and their use.

97.424 Information Science and Technology (3) W,Sp,Su
Introduction to the principles of information science, the notation of information, communication processes, the notion of relevance and information dissemination processes.

97-443 The Media Center (3)
Theoretical foundations of the use of print and nonprint materials and related technology in facilitating learning. Emphasis is on the role of the media specialist in the teaching-learning process.

Institutes and Short Courses: Special seminars and lectures throughout the year; annual Isabel Nichol Lecture.

Research Opportunities: None listed.

Computer Facilities: Burroughs 5500; remote terminals.

Admission Requirements:

M.A.: Bachelor's degree from an accredited college or university; grade point average of B for last 90 quarter hours (60 semester hours) of work; successful achievement on the G.R.E.; reading knowledge of at least one foreign language.

Certificate of Advanced Studies: Graduate library degree; three years of professional library experience; a clear concept of personal career objectives.

Tuition and Fees: $800 per quarter.

Financial Aid: Fifteen full-time and 10 half-time scholarships; 3 teaching and 3 research assistantships.

DREXEL UNIVERSITY
GRADUATE SCHOOL OF LIBRARY SCIENCE

Philadelphia, Pennsylvania 19104
(215) 387-2400

Director of Program: Guy Garrison; Dean (see faculty list below).

Description of Program: The Graduate School of Library Science at Drexel University educates professional and research personnel in library science, information science, and educational media. Only one 12-hour course is required of all students. Each student, with his adviser, plans an individualized program of study. Special studies and independent work are encouraged. By co-op arrangement, some course work may be done at Temple University and University of Pennsylvania.

Employment Preparation: Technical, management and planning, education and research types of work. Although most students work in academic libraries, special libraries, and information centers, a substantial number work in chemical and pharmaceutical firms or in the biomedical field.

Degree:
M.S. with Specialization in Information Science: 60 quarter hours, including L800 (12 hours) and other courses chosen from functional groups. Persons with substantial prior academic credits at graduate level, or work experience at professional level, may qualify for degree with 48 credits. Thesis optional.

Faculty:
Crow, James E. Adjunct Assistant Professor; B.S. in Mechanical Engineering, West Virginia.
Drott, M. Carl; Lecturer; M.S.E. in Industrial Engineering, Michigan, 1965.
Flood, Barbara; Assistant Professor; M.S. in Information Science; Drexel, 1966.
Garrison, Guy; Dean and Professor; Ph.D. in Library Science, Illinois, 1960.
Griffith, Belver; Professor; Ph.D. in Psychology, Connecticut, 1957.
Holm, Bart; Adjunct Associate Professor; B.C.E., Cornell, 1948.
Kenney, Brigitte; Assistant Professor; M.A. in Library Science, Chicago, 1958.
Painter, Anne; Associate Professor; Ph.D. in Library Science, Rutgers, 1963.
Ramey, James; Professor; Ed.D., Columbia, 1958.

Students Specializing in Information Science: A portion (approximately 30) of 320 graduate students.

Information Science Courses: (credit in quarter hours)
L807 **Advanced Cataloging and Classification** (3) W Painter
L810 **Syndetic Structures** (4) Sp Painter
L812 **Search Strategy** (4) W Drott
L814 **Reprographic Techniques for Information Processing** (4) F,Sp Crow
L815 **Computer Programming for Information Processing** (4) F,W,Su Drott
L816 **Abstracting and Indexing** (4) F,Sp Flood
L818 **Text Processing by Computer** (4) Sp Drott
Emphasis is primarily on nonnumerical programming using techniques of string manipulation. Students write programs dealing with problems such as concordance preparation, keyword indexing, and automatic abstracting.
L820 **Seminar in Cataloging and Classification** (4)
L856 **Evaluation of Information Systems** (4) Sp Griffith
L871 **Information Center Administration** (4) W Holm
L873 **Library Automation** (4) F,Sp Kenney

Institutes and Short Courses: None.

Research Opportunities for Students: A few research assistantships are available in the School.

Computer Facilities: Burroughs 5500 at Drexel plus access by terminal to IBM 360/75 and ancillary equipment at adjacent University City Science Center.

Admission Requirements:
Master's Program: B.A. or B.S. in relevant undergraduate field; at least half of undergraduate hours in liberal arts; grade point average of 3.0 on 4.0 scale.
Foreign Students: Same as above plus satisfactory test scores in English as a foreign language (T.O.E.F.L. or equivalent).

Tuition and Fees: $54 per credit hour.

Financial Aid: Available.

EAST CAROLINA UNIVERSITY
DEPARTMENT OF LIBRARY SCIENCE

Greenville, North Carolina 27834
(919) 758-6621

Director of Program: Dr. Gene D. Lanier; Chairman (see faculty list below).

Description of Program: Library-oriented curriculum; only one graduate course in information science is given.

Employment Preparation: Librarians.

Degree:
M.L.S.: 45 quarter hours–9 hours of required courses and 36 of electives. No thesis, but comprehensive research paper required. Written comprehensive exam.

Faculty:

Lanier, Gene D.; Chairman, Department of Library Science; M.S. in L.S., 1957; Ph.D., 1966.
DeBoard, Judith A.; Associate Professor; M.L.S., 1967.

Students Specializing in Information Science: None.

Information Science Courses: (credit in quarter hours)

L.S. 413 Automation of Library Processes (3)
Survey, analysis, and evaluation of the uses of data processing equipment for the performance of library functions. Review of computer developments, functions performed, and organization of computers.

Institutes and Short Courses: None listed.

Research Opportunities for Students: None listed.

Computer Facilities: Available at the Computer Center.

Admission Requirements: Bachelor's degree from an approved college or university; satisfactory undergraduate academic record; satisfactory scores on the Miller Analogies Test or the G.R.E. aptitude tests; and demonstration of a reading knowledge of one modern foreign language, or computer language, or statistics.

Tuition and Fees: State resident, full-time, $141 per quarter; resident, part-time, $12 per quarter hour; nonresident, full-time, $597 per quarter; nonresident, part-time, $57 per quarter hour.

Financial Aid: Teaching fellowships, scholarships, loans.

EMORY UNIVERSITY
DIVISION OF LIBRARIANSHIP

Atlanta, Georgia, 30322
(404) 377-2411, ext. 7671

Director of Program: Dr. A. Venable Lawson; Director; B.A., Alabama, 1946; M.Ln., Emory, 1950; D.L.S., Columbia, 1969.

Description of Program: The major objective is to introduce the potential librarian to those aspects of information science which appear to have the greatest relevance to libraries. Emphasis is given also to systems study and techniques of systems analysis as applied to library operations.

Employment Preparation: Librarians, particularly specialists.

Degrees:

M.Ln. (Master of Librarianship): Sixty quarter hours, including survey of librarianship (5 hrs.), reference (5 hrs.), cataloging (5 hrs.), and graduate seminar (5 hrs.).
M.A. in Librarianship: Forty-five quarter hours plus thesis, including the above requirements and research methods (4 hrs.).
D.A.S.L. (Diploma for Advanced Study in Librarianship): Forty-five quarter hours; courses taken depend on individual student's needs, interests, plans.

Faculty:

Clemons, John; Associate Professor; M.A. in Librarianship, Florida State, 1949.
Finks, Lee; Assistant Professor; M.A. in Librarianship, Florida State, 1959.
Taylor, Marion R.; Assistant Professor; M.A. in Librarianship, Emory, 1957.

Students Specializing in Information Science: No data given; 68 master's candidates enrolled.

Information Science Courses: (credit in quarter hours)

Lib. 342 Library Automation (4) Sp Clemons
Introduction to systems analysis; application of data processing to library operations; review of computing equipment and related technological developments.

Lib. 323 Information Retrieval (4) W Taylor
Designed to develop an understanding of basic theory and practical applications for mechanized systems for the storage and retrieval of recorded information. Examines the nature of information, specialized informational needs and levels of use as appropriate to various systems.

Institutes and Short Courses: None listed.

Research Opportunities for Students: Approximately 35 graduate assistants are placed in University libraries and other Atlanta area libraries. Each works 10 hours per week. These are seen as a form of financial aid and an opportunity to relate practical experience to the academic program.

Computer Facilities: University Computer Center's RCA 70-55 and 70-46.

Admission Requirements:

Master's Programs: Undergraduate degree; B average during last two years; satisfactory scores on G.R.E. aptitude tests; strong recommendations; well-defined objectives expressed by applicant.
Sixth Year: Master's degree in librarianship; two years' experience; other requirements same as for master's.
Foreign Students: T.O.E.F.L. scores instead of G.R.E.

Tuition and Fees: $800 per quarter for full-time enrollment; $67 per quarter hour for part-time enrollment.

Financial Aid: Approximately 35 graduate assistantships in University libraries and other Atlanta area libraries; 50% tuition grants to those with full-time library experience; 4-6 scholarships paying from $1000 to $1500 for academic year.

FLORIDA STATE UNIVERSITY
SCHOOL OF LIBRARY SCIENCE

Tallahassee, Florida 32306
(904) 599-2130

Director of Program: Harold Goldstein; Dean and Professor; Ed.D.

Description of Program: An area of specialization in the library school at the master's level. Comparable to specialization in cataloging or reference work. The objective of the program is to graduate students with an information science orientation for positions in which they can utilize their knowledge of systems analysis, abstracting, indexing, and computer applications in libraries.

Employment Preparation: Specialist and middle-management positions.

Degrees:

M.S. (Library Science) with specialization in Information Science; M.A. with specialization in Information Science: Course-type program of 48 quarter hours, or thesis-type program of at least 42 quarter hours plus 6 quarter hours thesis work.

Advance Master's and Doctoral Programs: Given by School; specialization in information science not available at these levels.

Faculty:

Jahoda, Gerald; Professor; M.L.S., D.L.S., Columbia, 1952, 1960.

Students Specializing in Information Science: 6 master's candidates.

Information Science Courses: (credit in quarter hours)

LIS 526 Advanced Classification and Cataloging (3) Massonnean

LIS 586 Information Science and Libraries (3) F,W,Sp Jahoda

Introduction to the design and evaluation of information systems. Data processing, microfilming, copying, and other equipment in libraries. Abstracting and indexing fundamentals.

LIS 587 Abstracting and Indexing (5) Sp Jahoda

LIS 588 Information Systems Design and Evaluation (3) Jahoda

Institutes and Short Courses: None listed.

Research Opportunities for Students: Joint project with computer-aided instruction center.

Computer Facilities: CDC 6400; IBM 1500.

Admission Requirements: G.R.E. score of 1000 or B average during last two years of undergraduate work.

Tuition and Fees: Florida resident, $240 per quarter; non-Florida resident, $590 per quarter.

Financial Aid: Graduate fellowships, graduate assistantships, several partial scholarships and loan funds, work-study programs possible.

GEORGE PEABODY COLLEGE FOR TEACHERS
SCHOOL OF LIBRARY SCIENCE

21st Avenue
Nashville, Tennessee 37203
(615) 327-8037

Director of Program: Edwin S. Gleaves, Jr.; Director of the Library School and Associate Professor; M.A., Ph.D., Emory, 1964.
R. Wilburn Clouse; Director of information science major (see faculty list below).

Description of Program: The systems-oriented curriculum emphasizes the methodology of systems analysis as it applies in one or more institutional contexts. The curriculum deals with the design and analysis of information systems, information retrieval, library networks, etc. The emphasis is on the management and decision-making aspects of information systems and operational and service needs.

Employment Preparation: Generation and input/output analysis; systems design and management techniques; instruction and research.

Degrees:

M.L.S.: Option Special Libraries is half information science courses. 36 semester hours required–30 hours must be library science, of which 18 hours are required courses; one resident semester; B average; field work in an approved library; written comprehensive examination.

Ed.S.: Options Library Administration and Supervision, subdivision Information Science, or the information science area of library services. 30 semester hours required, of which 9 hours are required courses; one resident semester; B average.

Faculty:

Clouse, R. Wilburn; Director of information science major; Director of Computer Center Operations and Assistant Professor; M.A. in Economics, Middle Tennessee State, 1968.

Hogge, James H.; Associate Professor of Psychology; Ph.D., Texas at Austin, 1966.

Students Specializing in Information Science: 27 full-time master's candidates, 2 other full-time students.

Information Science Courses: (credit in semester hours)
- **311 Problems in Cataloging and Classification** (3) Sp,Su
- **313 Systems Analysis in Library and Information Science** (3) F,Sp,Su
- **380 Audio-Visual Library Media** (3)
- **381 Data Processing of Library Operations** (3) Sp,Su
- **382 Documentation and Information Storage and Retrieval** (3) Sp,Su
  Theory, history and design of various mechanized systems for information storage and retrieval. Includes indexing and abstracting, file organization, question analysis and search strategy, evaluation of retrieval systems and their practicality for libraries.
- **Ed. 287 Automated Data Processing in Education** (3)
- **Psych. 211 Computer Applications in the Behavioral Sciences** Hogge

Institutes and Short Courses: Special lecturers and professors speak to student groups or teach special classes from time to time.

Research Opportunities for Students: None listed.

Computer Facilities: IBM 1130 Computer; Sigma 7; Hewlitt-Packard 2114A.

Admission Requirements:
- **M.L.S.:** Undergraduate degree with acceptable grade point average; G.R.E. scores; favorable screening from faculty.
- **Ed.S.:** M.L.S. or equivalent and 2 years library experience; favorable screening from faculty.
- **Foreign Students:** Exempt from G.R.E. but must submit scores on the T.O.E.F.L.

Tuition and Fees: $60 per semester hour.

Financial Aid: Various fellowships, assistantships, and loans; work-study programs and part-time employment in libraries.

GEORGIA INSTITUTE OF TECHNOLOGY
SCHOOL OF INFORMATION AND COMPUTER SCIENCE

225 North Avenue
Atlanta, Georgia 30332
(404) 873-4211, ext. 346, 347

Director of Program: Vladimir Slamecka; Director (see faculty list below).

Description of Program: The master's program offers professional education in two related fields: information systems engineering and computer systems engineering. The emphasis of the Information Systems option of study is on the analysis, design, and management of advanced information systems and networks such as corporate information systems, command/control systems, knowledge networks and learning systems. Although applications oriented, the curricula stress theoretical foundations of the profession, particularly logic, language theory, systems theory, and applied mathematics as well as management science.

Graduates of the doctoral program are expected to contribute to the foundations of the discipline, to guide its further development, or to manage its application in science, industry, and society.

Employment Preparation: Design and management of advanced information systems and networks: research, teaching, and policy-level management.

Degrees:
- **M.S. in Information and Computer Science:** With thesis—at least 18 hours in major field, 18 hours at 600-700 level, total required hours 33; without thesis—at least 27 hours in major field, 35 hours at 600-700 level, total required hours 50.
- **Ph.D. in Information and Computer Science:** While there are no fixed course requirements for the doctorate, the student is expected to pursue both a major and a minor field of study. The student's program usually requires two or more years of course work beyond undergraduate study.

Faculty:

Chiaraviglio, Lucio; Professor; M.A. in Philosophy and Mathematical Logic, Chicago, 1956; Ph.D. in Philosophy and Mathematical Logic, Emory, 1961; mathematical logic, semiotics, theory of computing.

Goda, J.J., Jr.; Assistant Professor; B.S. in Chemical Engineering, M.S. in Chemical Engineering, Massachusetts, 1960, 1965; computer programming and languages.

Gough, James, Jr.; Professor; A.M. in Linguistics, Ph.D. in Linguistics, Harvard, 1953, 1965; semiotics and linguistics.

Grosky, William I.; Assistant Professor; M.S. in Applied Mathematics, Brown, 1968; Ph.D. in Information Science, Yale, 1971; mathematical logic.

Gwynn, John M., Jr.; Assistant Professor; M.A. in Mathematics, Ph.D. in Mathematics, North Carolina, 1959, 1968; automata theory, computer languages.

Jensen, Alton P.; Senior Research Engineer; B.S. in Mechanical Engineering, Georgia Tech., 1956; advanced computing concepts, management of information utilities.

Kelly, Michael D.; Assistant Professor; M.S. in Computer Science, Ph.D. in Computer Science, Stanford, 1967, 1970; artificial intelligence, computer systems.

Kraus, David H.; Assistant Professor; M.A. in Linguistics, Harvard, 1946; linguistics, structures of natural language.

Roberts, Edward G.; Professor; B.A. in Library Science, Emory, 1948; Ph.D. in history, Virginia, 1950; information organization and use.
Rogers, David E.; Assistant Professor; M.S. in Russian, Georgetown U., 1966; Ph.D. in Linguistics, Michigan, 1969; computational linguistics, programming languages.
Siegmann, Philip J.; Associate Professor; M.A. in Psychology, Ph.D. in Psychology, Ohio State, 1951, 1954; behavioral aspects of information processes and systems.
Slamecka, Vladimir; Director and Professor; M.S. in Library Science, D.L.S., Columbia, 1958, 1962; information processes and systems.
Valach, Miroslav; Professor; M.S. in Mathematics, Engineering U., Prague, 1951; Ph.D. in Mathematics, Czechoslovak Academy of Science, 1958; cybernetics, computer design, switching theory.
Zunde, Pranas; Associate Professor; M.S. in Applied Science, George Washington U., 1965; Ph.D. in Industrial Engineering, Georgia Tech., 1968; systems theory, information systems, applied mathematics.

Students Specializing in Information Science: 127 master's candidates, 16 doctoral candidates, and 3 non-degree students.

Information Science Courses: (credit in quarter hours)
ICS 404 Topics in Linguistics (3) F
ICS 406 Computer Languages (3) W,Sp
ICS 423 Mathematical Techniques for Information Science (3)
ICS 424 Elements of Information Theory (3)
ICS 436 Information Systems (3) F
ICS 445 Logistic Systems (3) F,W,Sp
ICS 458 Computer Systems (3) F,W
ICS 607 Communication and Control of Information (3) W
ICS 608 Syntax of Natural Languages (3) W
ICS 609 Mathematical Linguistics (3) W
ICS 616 Information Control Methods (3) Su
ICS 621 Theory of Communication (3) Sp
ICS 626 Information Processes I (3) Sp
ICS 627 Information Processes II (3) Su
ICS 629 Information Measures (3) F
ICS 636-637 Information Systems Design I, II (3) Sp
ICS 638 Problems in Systems Design (2) F,W,Sp,Su
ICS 642 Advanced Semiotics (3) W
ICS 645 Advanced Logic (3) Sp
ICS 646 Philosophy of Mind (3) Su
ICS 647 Artificial Intelligence (3) Su
ICS 653 Computer Techniques for Information Storage and Retrieval (3) F,Sp
ICS 656 Computer Operating Systems (3) Sp
ICS 657 Design of Computer Operating Systems (3)
ICS 658 Evaluation of Computer Systems (3) Su
ICS 661 Computer Language Design (3) W
ICS 673 Organization and Management of Information Industry (3) Su
ICS 682 System Theory I (3) W
ICS 683 System Theory II (3)
ICS 705 Pattern Recognition (Special Problems Course) (3)
ICS 706 Management Information Systems Design (Special Problems Course) (3) Su
ICS 710 Philosophy of Language (3)
ICS 726 Theory of Automata (3) Sp
ICS 736 Information Systems Optimization (3)
ICS 738 Advanced Systems Design (3)
ICS 761 Syntax-Directed Compilation (3) Su

Institutes and Short Courses: On a weekly basis, the School provides seminars by its faculty and invited scholars, covering current areas of research in information and computer science.

Research Opportunities for Students: The School operates a well-endowed Research Center equipped with its own computer system and a laboratory.

Computer Facilities: PDP-8/I; B-5500; UNIVAC 1108.

Admission Requirements:
M.S.: Bachelor's degree from an accredited institution.
Ph.D.: Bachelor's degree from an accredited institution; passing of a preliminary examination consisting of two parts: a written portion and a research essay; evidence of ability and motivation to pursue advanced degree work.
Foreign Students: T.O.E.F.L.

Tuition and Fees: $168 per quarter for Georgia residents; $403 for nonresidents.

Financial Aid: A few fellowships and teaching/research assistantships are available.

HARVARD UNIVERSITY
DIVISION OF ENGINEERING AND APPLIED PHYSICS
CENTER FOR RESEARCH IN COMPUTING TECHNOLOGY

Pierce Hall
Cambridge, Massachusetts 02138
(617) 495-3989

Director of Program: Professor Thomas E. Cheatham, Jr. (see faculty list below).

Description of Program: The Center was established in July 1971 for the purpose of reorganizing computer science activities at Harvard so as to provide coherence and focus for research and training, and to provide the visibility necessary to raise funds required for adequate support. Four basic objectives of the Center are: (1) research in "core" areas of computer science as well as research centered around the application, use, and impact of computers; (2) training of graduate students; (3) development and coordination of courses in the computer science area; (4) development of a program enabling faculty and graduate students in other departments to draw on the expertise of the members and staff of the Center.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research positions.

Degrees:

S.M.: 8 half-courses with an average grade of B or better; at least 5 must be selected from the 200 series; the rest may be chosen from the 100 series, one of which may be replaced by a half-course at the intermediate or higher level in French, German, or Russian. Neither a thesis nor a foreign language is required.

A.M.: The requirements for the A.M. are the same as those for the S.M. except that a reading knowledge of an approved language, normally French, German, or Russian, is required. This knowledge is tested by examinations conducted at Harvard by the Educational Testing Service.

Ph.D.: 16 half-courses; minimum residence requirement, 2 years of advanced study beyond the bachelor's degree; demonstration of mastery of one major field and 2 or more minor fields. The required levels of proficiency are tested by general and special examinations, or in other ways, and by a dissertation describing original research on a suitable topic. No foreign language proficiency is required.

Faculty:

Book, Ronald V.; Assistant Professor of Computer Science; theory of computation, formal languages.
Cheatham, Thomas E., Jr.; Gordon McKay Professor of Computer Science; programming languages and systems.
Cohen, Dan; Assistant Professor of Computer Science; computer graphics.
Gagliardi, Ugo O.; Lecturer on Computer Science; operating systems.
Kuno, Susumo; Professor of Linguistics; computational linguistics, linguistic theories, English and Japanese linguistics.
Mealy, George H.; Lecturer on Computer Science; operating systems.
Oettinger, Anthony G.; Professor of Linguistics and Gordon McKay Professor of Applied Mathematics; computer applications.
Standish, Thomas A.; Assistant Professor of Computer Science; programming theory.
Wegbreit, Eliot L.; Assistant Professor of Computer Science; programming systems and languages.
Woods, William A., Jr.; Lecturer on Computer Science; computational linguistics, artificial intelligence, information retrieval.

Students Specializing in Information Science: Approximately 20 master's and 80 doctoral candidates enrolled.

Information Science Courses:

Engineering Sciences 110 Introduction to Computer Programming (half course) Sp Cheatham
Engineering Sciences 112 Introduction to Digital Computers (half course) F Bartee
Engineering Sciences 113 Introduction to Programming Languages (half course) F Cheatham
Engineering Sciences 119 Introduction to Decision and Control (half course) F Fiering
Applied Mathematics 215 Decision Theory (half course) Sp Ho
Applied Mathematics 219a System Programming–Data Structures (half course) F Mealy
Applied Mathematics 219b System Programming–Control Structures (half course) Sp Mealy
Applied Mathematics 220r Seminar in Operating System Design (half course) F Mealy
Applied Mathematics 221 Information Retrieval and Question-Answering (half course) F Woods
Applied Mathematics 251a Operating Systems Architecture (half course) F Gagliardi
Applied Mathematics 251br Seminar: Operating System Optimization (half course) Sp Gagliardi
Applied Mathematics 252a Computer Graphics (half course) F Standish
Applied Mathematics 252br Seminar: Computer Graphics (half course) Sp (not given 1971-72)
Applied Mathematics 260 Advanced Programming Languages (half course) F Wegbreit
Applied Mathematics 261r Software Laboratory (full course) Standish, Wegbreit
Applied Mathematics 271 Seminar: Technology and Education (half course) Sp Oettinger
Applied Mathematics 294r Special Topics in Automata Theory and Mathematical Linguistics (half course) Sp (not given 1971-72)
Applied Mathematics 295 Theory and Construction of Compilers (half course) Sp Cheatham
Applied Mathematics 297 Automata Theory (half course) F (not given 1971-72)

Institutes and Short Courses: Dunham Distinguished Lecture Series of 10 lectures on Computer Science and its Applications; several other lectures, not yet announced.

Research Opportunities for Students: A number of government and other research contracts provide research activities for students. Although there is no guarantee that this will continue, in the past the research interests of most students have been covered by existing contracts.

Computer Facilities: The Center has a small PDP-10 computer connected to the ARPA network, and a PDP-1 computer with a wide variety of input/output devices.

Admission Requirements:

S.M., A.M., Ph.D.: Bachelor's degree or the equivalent from an accredited college or university.

Foreign Students: Only students who have the B.A. degree with first class honors or other evidence of academic excellence; can understand rapid, idiomatic English and can speak, write and read English with a high degree of facility; and can prove their ability to support themselves financially for the academic year should apply for admission. A student whose native language is not English must pass either a test of English proficiency administered by a U.S. Consul or appointee delegated by him to conduct such tests, or the T.O.E.F.L.

Tuition and Fees: Full-time students, $2800 per year ($1400 per half-year) until financial residence is fulfilled. Part-time students and teaching fellows, for 1 full course, $820 ($410 per term); for 2 full courses, $1480 ($740 per term); for 3 full courses, $2140 ($1070 per term). Ph.D. candidates entering in 1971-72 and thereafter pay full tuition for 3 years; those enrolled before 1971-72 pay 2 year's full tuition. Enrollment thereafter will be $1000 per year ($500 per term), regardless of the number of courses taken.

Financial Aid: Scholarships; National Science Foundation and U.S. Public Health Service traineeships; teaching fellowships and assistantships; research and technical assistantships.

UNIVERSITY OF HOUSTON
COMPUTER SCIENCE DEPARTMENT

104-Technology Building
Houston, Texas 77004
(713) 748-6600, ext. 652

Director of Program: L. Duane Pyle; Chairman (see faculty list below).

Description of Program: The master's program emphasizes basic grounding in computer science with opportunities to specialize in programming languages, large-scale information systems, artificial intelligence, numerical analysis, automata theory, and computer architecture. It may appropriately be described as a computer science-oriented curriculum.

Employment Preparation: Systems programming; information systems; mathematical programming; systems design; computer-aided instructional systems.

Degree:

M.S. in Computer Science: 30 hours, including 6 hours of thesis; at least 9 hours of advanced graduate courses; at most, 9 hours of senior and beginning graduate courses; and 6 hours outside the department. Thesis required (6 credit hours).

Faculty:

Anderson, Robert B.; Assistant Professor; Ph.D. in Mathematics, Texas, 1970; theory of computation and artificial intelligence.
Huang, Jung-chang; Assistant Professor; Ph.D. in Electrical Engineering, Pennsylvania, 1969; switching theory and automata.
King, Willis K.; Assistant Professor; Ph.D. in Electrical Engineering, Pennsylvania, 1969; digital computing systems, logic design.
Lenahan, John J.; Assistant Professor; Ph.D. in Computer Science, Wisconsin, 1969; intelligence systems.
Meicler, Marcel; Assistant Professor, Ph.D. in Mathematics, Texas, 1966; numerical analysis.
Newhouse, Albert; Professor, Ph.D. in Mathematics, Chicago, 1939; numerical analysis, programming languages.
Plummer, Robert P.; Assistant Professor; Ph.D. in Computer Science, Texas, 1970; artificial intelligence.
Pyle, L. Duane; Chairman and Professor; Ph.D. in Mathematics, Purdue, 1960; numerical analysis.
Sibley, Robert A., Jr.; Associate Professor; M.A. in Mathematics, Texas, 1959; programming systems.
Walker, Terry M.; Associate Professor; Ph.D. in Statistics, Alabama, 1966; business data processing.
Wyatt, Joe B.; Associate Professor; M.A. in Mathematics, Texas Christian, 1960; operating systems.

Students Specializing in Information Science: Nearly 100 master's candidates enrolled.

Information Science Courses: (credit in semester hours)

241	Computer Organization and Programming (3)
332	Information Structures (3)
335	Programming Problems (3)
431	Structure of Programming Languages (3)
433	Computer and Programming Systems (3)
434	Introduction to Automata (3)
632	Introduction to Symbol Manipulation (3)
634	Information Storage and Retrieval (3)
636, 637	Large Scale Information Systems (3,3)
638	Theory of Automata (3)
661	Languages and Processors (3)
668	Formal Languages (3)
681	Introduction to Computer Science (3)
682	Introduction to Logic and Computing Machines (3)

Institutes and Short Courses: A colloquium series of faculty and invited speakers (approximately 12 one-hour sessions per year) exposes graduate students to the various subdisciplines and topical areas in computer science.

Research Opportunities for Students: Research assistantships on government research contracts, staff positions in the University Computing Center.

Computer Facilities: UNIVAC 1108; IBM 360/44; Interdata Model 4.

Admission Requirements:

M.S.: Bachelor's degree with some background in mathematics and computer science.

Foreign Students: Appropriate degree with some background in computer science and mathematics and 2.0 grade point average (on 3.0 scale).

Tuition and Fees: State residents, $108 per semester; nonresidents, $258 per semester.

Financial Aid: 11 teaching fellowships, 4 research assistantships, N.A.S.A. traineeships (University-wide).

UNIVERSITY OF ILLINOIS
GRADUATE SCHOOL OF LIBRARY SCIENCE

329 Library
Urbana, Illinois 61801
(217) 333-3281

Director of Program: Herbert Goldhor; Director of the Graduate School of Library Science and Professor; Ph.D., Chicago.

Description of Program: Information science courses are offered as part of the graduate program in library science.

Employment Preparation: Specialist, planning, and management positions.

Degrees:

M.S. in Library Science: Four introductory courses in: reference, administration, cataloging, and book selection (total 12 semester hours) plus 32 semester hours of graduate-level elective courses. Thesis not required.

Certificate of Advanced Study: 32 semester hours of electives beyond the master's degree; 16 semester hours may be taken outside the department. Thesis not required.

D.L.S.: 48 semester hours of course work, preliminary examination, doctoral project.

Ph.D. in Library Science: 40 semester hours of course work, research tool (foreign language or statistics), preliminary examination, research thesis.

Faculty:

Crowley, Terence; Assistant Professor of Library Science; M.L.S., Ph.D., Rutgers.

Divilbiss, J.L.; Associate Professor of Library Science; M.S., Ph.D., Illinois.

Henderson, Kathryn Luther; Assistant Professor of Library Science; B.S. in L.S., M.S. in L.S., Illinois.

Isaacs, Dan Lee; Head of the Instructional Materials Division of the Office of Instructional Resources and Assistant Professor of Educational Psychology; Ph.D., Indiana.

Lancaster, F. Wilfrid; Associate Professor of Library Science; Newcastle- upon-Tyne School of Librarianship; Fellow (by thesis) of the Library Association of Great Britain, 1969.

Students Specializing in Information Science: A portion of approximately 220 master's, doctoral, and non-degree students.

Information Science Courses: (credit in semester hours)

354 **Audio-Visual Communication** (3) F,Su Isaacs

408 **Cataloging and Classification, II** (4) Sp,Su Henderson

409 **Communication Roles and Responsibilities of Libraries** (4) F,Su Crowley

Media organization, content, and research are reviewed; problems of intellectual freedom are considered as an aspect of communications behavior; and the potential role of electronic devices in library activities now and for the future is discussed.

415 **Library Mechanization and Automation** (4) F,Sp,Su Divilbiss

429 **Information Storage and Retrieval** (4) F,Sp,Su Lancaster

Analyzes the problems which confront libraries and library users as a result of the growth of literature. Reviews the various systems for storing and retrieving information. Introduces the underlying models and basic types of equipment for both traditional and non-conventional systems. Emphasizes practical applications in libraries.

434 **Library Systems** (4) Sp,Su Crowley

444 **Evaluation and Testing of Information Retrieval Systems** (4) Su Lancaster

450B **Content Analysis and Control of Vocabulary** (4) Sp Lancaster

450C **Advanced Library Mechanization and Automation** (4) Sp Divilbiss

Institutes and Short Courses: Vary from year to year.

Research Opportunities for Students: Some in the Library Research Center, many in other departments or colleges of the University.

Computer Facilities: Extensive, all types.

Admission Requirements:

M.S.: Bachelor's degree from an accredited institution; two years of college-level foreign language; grade point average of at least 3.75 on a 5.0 scale; undergraduate major of 24 semester hours in a field other than library science.

C.A.S.: M.S.L.S. from an accredited library school; two years of full-time library work experience since receipt of fifth-year library science degree; a graduate grade point average of 4.0 (on a 5.0 scale).

D.L.S. and Ph.D.: M.S.L.S. from an accredited library school; two years of full-time library work experience since receipt of fifth-year library science degree; graduate grade point average of 4.0 (on a 5.0 scale); submission of G.R.E. scores; an interview on campus.

Foreign Students: Above plus a T.O.E.F.L. score of 570 or over, extensive experience in using English, library work experience or successful completion of introductory courses.

Tuition and Fees: In state, $550 per academic year; non-resident, $1400.

Financial Aid: Fellowships, tuition and fee waivers and graduate assistantships are available.

ILLINOIS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE

Chicago, Illinois 60616
(312) 225-9600, ext. 1212

Director of Program: Dr. Robert Tobey; Chairman (see faculty list below).

Description of Program: A balanced theoretical and practical curriculum stressing software systems design and implementation, the theory of computing, computer applications in related fields, and computer architecture.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research.

Degrees:

M.S. in Computer Science: 32 hours required; formal languages, theory of computation, operating systems, computer architecture, compiler design, seminar, special project. No thesis.

M.S.T. in Computer Science: 32 hours required; computers and society, computer languages, computer and curriculum content, computer assisted instruction, seminar, reading and special problems. No thesis.

Faculty:

Bauer, Charles; Adjunct Assistant Professor; M.Ed., Loyola, 1954.
Dewar, Robert; Associate Professor; Ph.D. in Chemistry, Chicago, 1968.
Fisher, Gerald; Assistant Professor; Ph.D. in Mathematics, Connecticut, 1969.
Hosch, Frederick; Assistant Professor, Ph.D. in Computer Science, Wisconsin, 1971.
Mayne, Joseph; Assistant Professor, Ph.D. in Mathematics, Illinois Tech., 1970.
Tobey, Robert; Chairman and Professor; Ph.D. in Applied Mathematics, Harvard, 1967.
Wojcik, Anthony; Assistant Professor; Ph.D. in Computer Science, Illinois, 1971.
In addition, selected experts from governmental and industrial research laboratories teach specialty courses.

Students Specializing in Information Science: Approximately 50 master's candidates enrolled.

Information Science Courses: (credit in semester hours)

CS 202 Programming for Digital Computers (2) F,Sp
CS 325 Data Processing and File Management (3) F,Sp
CS 330 Mathematical Structures of Information Science (3) F,Sp
CS 440 Programming Languages (3) F,Sp
CS 450 Computer Operating Systems (3) F,Sp
CS 480 Telecommunications Systems (3) F,Sp
CS 510 Information Storage & Retrieval (3) F
CS 513 Computer Graphics (3) F
CS 514 Image Processing & Pattern Recognition (3) Sp
CS 540 Formal Language & Syntactic Analysis (3) F,Sp
CS 550 Compiler Construction I (3) F,Sp
CS 562 Computer Assisted Instruction (3) F

Institutes and Short Courses: Noncredit workshops for teachers, supervisors, and administrators; five-Saturday computer science courses for 6th-14th grade students; SPANTRAN, a ten-Saturday course for 9th-12th grade Spanish-speaking students.

Research Opportunities for Students: Student project typically involves each graduate student in some research area of his choice.

Computer Facilities: UNIVAC 1108; SCC 4700.

Admission Requirements:

M.S.: B.S. or B.A.; B average; 12 hours undergraduate computer science and 12 hours undergraduate mathematics.

M.S.T.: B.S. or B.A.; B average. Students whose undergraduate training does not include at least 12 semester hours of Information and Computer Science and a mathematics, science, or engineering background, will be required to make up deficiencies before being considered as candidates for graduation.

Foreign Students: T.O.E.F.L.

Tuition and Fees: Full-time, $1000 per semester; part-time, $70 per credit hour.

Financial Aid: Teaching assistantships, fellowships.

ILLINOIS INSTITUTE OF TECHNOLOGY
SCIENCE INFORMATION PROGRAM

Life Science Building
Chicago, Illinois 60616
(312) 225-9600, ext. 1252, 2151

Director of Program: Albert J. Brouse; Director of Science Information Program (see faculty list below).

Description of Program: Science information is a new interdisciplinary curriculum concerned with the management and processing of technical and scientific information. It brings together four related areas of study: information processes, library systems, technical writing, and management and operation of information centers. The program is health and biomedically oriented.

Employment Preparation: Operation and management of information centers. The science information graduate is trained as the intermediary between the user and the supplier of information.

Degree:
M.S.: One year to complete (32 semester hours); an extended report is required.

Faculty:
Brouse, Albert J.; Director of Science Information Program and Associate Professor of English; M.A., Duke, 1947; Ph.D., Western Reserve, 1956.
Budington, William S.; Executive Director and Librarian, The John Crerar Library and Adjunct Professor of Science Information; B.S. in Library Science, Columbia, 1941; B.S. in Electrical Engineering, Virginia Polytechnic, 1946; M.S., Columbia, 1951.
Greenburg, A. Gerson, M.D.; M.D., Chicago, 1963; Ph.D. in Industrial Engineering/Management Sciences, Northwestern, 1970.
Locke, David M.; Assistant Professor of English; M.S. in Organic Chemistry, Ph.D., Illinois at Urbana, 1953, 1954.
Stiff, Ronald; Assistant Professor of Management; M.B.A. in Marketing, Chicago, 1969; Ph.D. in Management, Northwestern, 1971.
Williams, Martha E.; Manager of Technical Information Research and Adjunct Associate Professor of Science Information; M.A. in Philosophy, Loyola.

Students Specializing in Information Science: Information science courses are taken, along with others, by 14 full-time master's candidates.

Information Science Courses:
Information Storage and Retrieval
Introduction to Linguistics
Systems Analysis and Management
Library Automation
Audio-Visual Aids

Institutes and Short Courses: None.

Research Opportunities for Students: Students will be available to organizations hiring them part- or full-time, and they will receive academic credit for such in-service training.

Computer Facilities: All facilities of the Division of Computer Sciences.

Admission Requirements: Students must have a B.S. in a field related to health-science interests, or to medical librarianship. These include chemistry, biology, public health, pharmacy, nursing, etc. Foreign students must have a permanent visa and meet language requirements in English.

Tuition and Fees: $2000 for the full year of two semesters. This is paid by The National Library of Medicine.

Financial Aid: 10 stipends of $2400 each, plus $500 for each dependent; 10 full free-tuition scholarships; other partial financial aid.

INDIANA UNIVERSITY
GRADUATE LIBRARY SCHOOL

Bloomington, Indiana 47401
(812) 337-2848

Director of Program: Bernard M. Fry (see faculty list below).

Description of Program: The overall orientation of the program is toward convergence of the two disciplines of library science and information science, with the thought in mind that the operational aspects of each involve techniques for accomplishing but a single function: the transfer of information in a non-direct communication context. In taking this approach, the School incorporates aspects of at least two of the approaches, those of the library-oriented curriculum and that which is oriented toward systems analysis and design.

Employment Preparation: Input, organization and retrieval; systems analysis, coordination; supervision of programming teams; teaching of information science; research design and implementation.

Degrees:
M.L.S. with specialization in Information Science: 36 semester hours of graduate credit. Library science courses required: L504, L508, L510, L516, L523, L524, L525, L544, L558. In addition, at least two of the 640 series information science courses are required. No thesis.
M.L.S.-Information Specialist (Chemistry): Candidates in this joint program receive the M.L.S. degree. They are required to complete L504, L508, L510, L524, L544, L558, L643, and L644. The remaining hours are directed by the chemistry department and must include C400-C401.
Ph.D. in Information Science: Ninety hours of an advanced course of study, including the following specific requirements: L703 and L799 and a course in statistics taken outside the Graduate Library School.

Faculty:
Fry, Bernard M.; Dean and Professor; M.S. in L.S., Catholic U., 1952.
Libbey, Miles A.; Assistant Professor; M.S., M.I.T., 1945.
Pratt, Allan; Assistant Professor; M.S. L.S., Case Western Reserve, 1959.
Shepherd, Clayton A.; Associate Professor; A.M., Maryland, 1956.

Students Specializing in Information Science: A portion of the 165 master's candidates, 43 Ph.D. candidates, and 9 non-degree students enrolled in the School.

Information Science Courses: (credit in semester hours)
L544 Introduction to Information Science (3) Shepherd
Introduction to the methodology and techniques of information science. History of development; present applications, including manual, punched card, microform, and computer media. Library mechanization; information centers. Future developments.
L583 Advanced Cataloging and Classification (3)
L584 Mechanization of Library Technical Processes (3)
L643 Computer Applications in Information Systems (4) Shepherd
L644 Information Storage and Retrieval–Methods and Techniques (3) Shepherd
L645 Systems Analysis and Design (4)
L646 Information Systems Administration (3)
L763 Advanced Theory of Information Science (3)
L764 Seminar in Information Science (3)
L765 Independent Study in Information Systems (2-4)

Institutes and Short Courses: None listed.

Research Opportunities for Students: A Research Center for Library and Information Science is operated under the auspices of the Graduate Library School to provide facilities involvement with ongoing research for continuing student participation. On the average, three contracts for research on contemporary library and information science problems are underway at any one time, with opportunities for participation by several doctoral and master's students.

Computer Facilities: CDC 6600; IBM 360/40; a typewriter terminal (IBM 274) and other terminals on site.

Admission Requirements:
M.L.S.: Must possess a bachelor's degree from an accredited 4-year collegiate institution which requires 3 years of general education distributed among the social sciences, biological and physical sciences, literature, and other areas of the humanities; a cumulative grade point average of 3.0 on a 4.0 scale in at least the latest 60 hours of collegiate work, or high scores on the Aptitude Test of the Graduate Record Examination; good physical and mental health; and the ability to use correct, clear, effective English.
Ph.D.: Must meet the requirements for admission stated in the Graduate School Bulletin; must possess a master's degree in library science from an accredited library school; must have an average of 3.5; and must have acceptable library experience.

Tuition and Fees: $27 per semester hour for Indiana residents; $62 per semester hour for out-of-state students.

Financial Aid: Graduate assistantships, Graduate Library School fee remission awards, fee remission scholarships, University fellowships.

THE UNIVERSITY OF IOWA
SCHOOL OF LIBRARY SCIENCE

202 Jessup Hall
Iowa City, Iowa 52240
(319) 353-3650

Director of Program: Frederick Wezeman; Director, School of Library Science; M.E., Chicago Teachers College, 1941; B.L.S., Chicago, 1946.

Description of Program: A library-oriented curriculum.

Employment Preparation: Librarians, particularly specialists in generation, input, processing, and storage of information.

Degree:
M.A. in Library Science: 33 semester hours including 18 hours of required courses in library science. Thesis optional.

Faculty:
Hiland, Leah F.; Assistant Professor; M.A.L.S., Indiana, 1960.

Students Specializing in Information Science: No data given; 72 master's candidates enrolled in the School.

Information Science Courses: (credit in semester hours)
21:246 Introduction to Information Science (3) F,Sp,Su Hiland
To acquaint the librarian with the concepts and terminology of information science and technology; analyze and evaluate new methods for processing, storing, retrieving, and disseminating information; review the techniques of systems analysis and design; and acquaint the librarian with the requirements and techniques for the automation of library subsystems and services.

Institutes and Short Courses: None.

Research Opportunities for Students: The Traveling Scholar Program, developed by the Committee on Institutional Cooperation (CIC), represents the Big Ten universities and the University of Chicago. The Traveling Scholar Program gives graduate students at CIC institutions access to courses, research facilities, and source materials which other CIC institutions offer and their own do not.

Computer Facilities: IBM 360/65 at the University Computer Center.

Admission Requirements:

M.A.: Undergraduate degree with 2.5 grade point average; 85-90 hours of liberal arts; 1 year modern foreign language; satisfactory G.R.E. aptitude test scores; personal interview; 3 letters of reference.

Foreign Students: T.O.E.F.L. Exam unless they have received a degree from an accredited college or university in the U.S., U.K., Canada, Australia, or New Zealand.

Tuition and Fees: Iowa resident, $355 per semester; nonresident, $600 per semester.

Financial Aid: One-fourth-time teaching assistantships; scholarships.

IOWA STATE UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE

227 Computer Science Building
Ames, Iowa 50010
(515) 294-4377

Director of Program: Dr. Robert M. Stewart, Jr; Chairman (see faculty list below).

Description of Program: The emphasis in this program is primarily on theoretical aspects, with secondary emphasis on current techniques and applications. The Ph.D. degree is a research-oriented degree, and the candidate is required to produce a dissertation that shows a significant contribution to knowledge in computer science. In addition he is expected to demonstrate high attainment and proficiency in computer science. The master's degree is less rigorously research-oriented. It is available with thesis for those who wish to pursue a research project, and it is also available without thesis.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research.

Degrees:

M.S. in Computer Science: 45 quarter credits, including C.S. 501, 502, 503, a year of computer engineering, a year of numerical methods, and either a thesis or a paper demonstrating ability to organize and express significant ideas in computer science.

Ph.D. in Computer Science: Same courses as for the M.S., including a total of at least three years of full-time graduate study and a dissertation.

Faculty:

Brearley, Harrington C., Jr.; Associate Professor of Electrical Engineering and Computer Science; M.S., Ph.D., Illinois, 1950, 1954.

Grosvenor, Dale D.; Associate Professor of Computer Science and Assistant Director of Computation Center; M.S., Ph.D., Iowa State, 1960, 1963.

Hutton, Norman E.; Assistant Professor of Veterinary Pathology and Computer Science; D.V.M., M.S., Iowa State, 1966, 1969.

Jespersen, Howard W.; Associate Professor of Computer Science; M.S., Rochester, 1953.

Keller, Roy F.; Professor of Mathematics and Computer Science; M.A., Ph.D., Missouri, 1958, 1962.

Lambert, Robert J.; Professor of Mathematics and Computer Science; M.S., Ph.D., Iowa State, 1948, 1951.

Maple, Clair G.; Professor of Mathematics and Computer Science; Director of Computation Center; Division Chief, Mathematics and Computer Science, Institute for Atomic Research; M.A., Cincinnati, 1940; D.Sc., Carnegie, 1948.

Oldehoeft, Arthur E.; Assistant Professor of Computer Science; M.S., Oklahoma State, 1959; Ph.D., Purdue, 1970.

Pohm, Arthur V.; Professor of Electrical Engineering; M.S., Ph.D., Iowa State, 1953, 1954.

Schuster, Donald H.; Professor of Psychology; M.A., Minnesota, 1953; Ph.D., Southern California, 1961.

Silverston, Stefan M.; Assistant Professor of Computer Science and Mathematics; M.S., Michigan, 1959; Ph.D., Purdue, 1970.

Stevens, John D.; Associate Professor of Chemical Engineering and Computer Science; Ph.D., Michigan State, 1965.

Stewart, Robert M., Jr.; Chairman of the Department and Professor of Computer Science; Professor of Electrical Engineering and Physics; Senior Physicist, Institute for Atomic Research; Associate Director, Computation Center; Ph.D., Iowa State, 1954.

Strawn, George P.; Assistant Professor of Computer Science and Mathematics; Ph.D., Iowa State, 1969.

Thomas, Rex A.; Assistant Professor of Computer Science and Education; M.A., Northern Iowa, 1961; Ph.D., Iowa State, 1970.

Ulrichson, Dean L.; Assistant Professor of Chemical Engineering and Computer Science; M.S., Illinois, 1963; Ph.D., Iowa State, 1970.

Wright, Charles T., Jr.; Assistant Professor of Computer Science; Senior Systems Analyst, Institute for Atomic Research; M.A., Southern Illinois, 1964; Ph.D., Iowa State, 1970.

Zingg, Roy J.; Associate Professor of Electrical Engineering and Computer Science; M.S., Ph.D., Iowa State, 1961, 1968.

Students Specializing in Information Science: Approximately 40 master's and 20 doctoral candidates are enrolled in the Department.

Information Science Courses: (credit in quarter hours)

C.S.501, 502, 503 Programming Languages and Operating Systems (3,3,3) F-W-Sp Wright

C.S.551, 552, 553 Structure and Processing of Information (3,3,3) F-W-Sp Jesperson

C.S.610 Seminar (2 or 3)

Special interest seminars are offered from time to time to supplement regular course offerings. Recent such offerings include instructional systems, advanced topics in syntactic analysis, and artificial intelligence.

E.E.685 Advanced Logic Systems (3) Sp Stewart

Institutes and Short Courses: None listed.

Research Opportunities for Students: Research positions in Iowa State University Computation Center, Computer Division of the Ames Laboratory of the Atomic Energy Commission, and various research contracts.

Computer Facilities: Digital–IBM 360/65; analog–EAI 8800; PDP-11; Fairchild SYMBOL Research Computer.

Admission Requirements:
M.S.: Bachelor's degree from accredited university, ranking in upper half of class.
Ph.D.: Same as for master's degree, plus strong indication of considerable competence.
Foreign Students: Applicants from foreign countries are granted restricted admission only. They may be removed from restricted admission upon achieving a satisfactory grade point average.

Tuition and Fees: Iowa residents, $235 per quarter; nonresidents, $410 per quarter.

Financial Aid: Teaching assistantships with stipend of $320 per month; research assistantships with stipend of $310 per month.

KANSAS STATE UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE

Fairchild Hall
Manhattan, Kansas 66502
(913) 532-6350

Director of Program: Dr. Harold Sackman; Head.

Description of Program: A computer science-oriented curriculum.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research.

Degrees:
M.S. in Computer Science: 32 semester hours agreed upon by the supervisory committee, student, and department head. Curriculum variable. Master's report required.
Ph.D. in Computer Science: About 60 hours of graduate course credit and 30 hours of Problems & Research credit; passage of written & oral exams; at least one year in residence. (The Ph.D. program is new and so is the department; changes are inevitable.)

Faculty:
Brewer, Richard K.; Assistant Professor of Statistics and Computer Science; M.S., Wisconsin, 1964; computational linguistics, information retrieval.
Calhoun, Myron.
Fisher, Paul S.; Assistant Professor of Computer Science; M.S., Utah, 1964; Ph.D., Arizona State, 1969; automata theory, programming languages.
Sincovec, Richard F.; Assistant Professor of Statistics and Computer Science; M.S. in Applied Mathematics, Ph.D. in Applied Mathematics, Iowa State, 1967, 1968.
Trump, Thomas N.; Assistant Professor of Statistics and Computer Science; M.S. in Computer Science, Purdue, 1966; systems programming, numerical analysis.
Weinberg, Roger; Associate Professor of Computer Science; M.A., Ph.D., Texas, 1952, 1954; M.S., Ph.D., Michigan, 1969, 1970; computer simulation, ecosystems.

Students Specializing in Information Science: Approximately 15 master's candidates are enrolled in the department.

Information Science Courses: (credit in semester hours)
286 315 **Fundamentals of Computer Programming** (3) F,Sp,Su
286 410 **COBOL** (3)
286 425 **Computer Organization and Programming** (3) F,Sp,Su
286 440 **Introduction to Programming Languages** (3) F,Sp
286 525 **Introduction to Information Structures** (3) F
286 535 **Non-numeric Programming** (3) F,Sp,Su
286 610 **List and String Processing Languages** (3) Sp,Su
286 620 **Programming Systems** (3) F,Su
286 635 **Artificial Intelligence**
286 640 **Programming Languages** (3) Sp
286 670 **Information Organization and Retrieval** (3) F
286 701 **Automata Theory I** (3) F Alternate years
286 710 **Compiler Design I** (3) Alternate years
286 711 **Compiler Design II** (3) Sp,Su
286 798 **Topics in Computer Science** (credit arranged) F,Sp,Su
286 800 **Computational Semantics** (3) F,Su
286 801 **Automata Theory II** (3) Sp,Su

Institutes and Short Courses: None listed.

Research Opportunities for Students: This is just developing because the Ph.D. Degree was just authorized and the research faculty is still being expanded.

Computer Facilities: IBM 360/50 chiefly; a minicomputer (Nova) is also available half-time.

Admission Requirements:
M.S.: Near-equivalent of B.A. or B.S. This includes about 20-24 semester hours in computer science.
Ph.D.: Near-equivalent of M.S. in computer science. All graduate admissions require B or better.
Foreign Students: Satisfactory score on T.O.E.F.L.; equivalent of B average on previous work.

Tuition and Fees: $476 (residents) to $1066 (nonresidents) for two regular semesters.

Financial Aid: Teaching or research assistantships, $2475-$2700 for 9 months.

KENT STATE UNIVERSITY
SCHOOL OF LIBRARY SCIENCE

Kent, Ohio 44242
(216) 672-2782

Director of Program: Guy A. Marco; Dean.

Description of Program: A library-oriented program. Expansion in this area is not planned.

Employment Preparation: Librarians, particularly specialists in generation, input, processing, and storage of information.

Degree:

M.L.S.: 48 quarter hours, including 6 core courses (3 hours each); one core course is Data Processing in the Library. Thesis optional; research paper and additional coursework can meet requirements.

Faculty:

Heiliger, Edward; Director of the Center for Library Studies and Professor of Library Science; B.S.L.S., M.A. in history, Denver, 1934, 1941.

Rosenberg, Kenyon C.; Assistant Professor; M.S.L.S., Southern California, 1961.

Students Specializing in Information Science: No data given; 86 master's candidates enrolled in the School.

Information Science Courses: (credit in quarter hours)

L.S.640 Data Processing in the Library (3) Heiliger

Computer and other machine applications to library cataloging; acquisitions work; book selection; serials control; circulation routines; inventory control; reference work; and administrative uses, including personnel and budget work. Systems analysis.

L.S.641 Information Retrieval in the Library (3) F,Sp Heiliger, Rosenberg

Information retrieval as a communications problem; types of information systems; coordinate indexing; automatic indexing and abstracting; current awareness services; retrospective search services; IS and R systems; hardware and software; and economic considerations.

Institutes and Short Courses: None.

Research Opportunities for Students: None.

Computer Facilities: None used.

Admission Requirements:

M.L.S.: Cumulative grade point average of 3.0 on a 4.0 scale; score of 550 on the verbal portion of the G.R.E.

Foreign Students: Score of 520 on the T.O.E.F.L.

Tuition and Fees: $224 per quarter for Ohio residents; $524 per quarter for out-of-state students.

Financial Aid: Research assistantships.

UNIVERSITY OF KENTUCKY
COLLEGE OF LIBRARY SCIENCE

4th floor of Patterson Office
Lexington, Kentucky 40506
(606) 257-1734

Director of Program: Dean Lawrence A. Allen.

Description of Program: The program possesses a system orientation emphasizing the methodology of systems analysis and design as it applies to the library/information center context. The curriculum includes the analysis and design of library systems, evaluation of library systems, determination of user needs, library automation, information storage and retrieval and other related topics. Emphasis is on the operational and service needs of libraries and users.

Employment Preparation: Professional librarians who will function in libraries and information centers in acquisitions, processing, storage, retrieval, and dissemination; systems analysis; management.

Degrees:

M.S.L.S.: 36 hours total; 9 hours (LS 500, 501, and 502) required; 27 hours of electives. Thesis not required.

M.A. in Library Science: 36 hours total; 15 hours (LS 500, 501, 502, 6 hours thesis credit) required; 21 hours of electives.

Faculty:

Waldhart, Thomas J.; Assistant Professor; M.S.L.S., Wisconsin, 1964; C.P. in Library Science, Indiana, 1970.

Students Specializing in Information Science: No data given; 129 master's candidates enrolled in the College of Library Science.

Information Science Courses: (credit in semester hours)

LS 605 Introduction to Information Science (3) F,Sp Waldhart

Introduction to major areas of information science and technology. Consideration is given to the nature of information science and technology as a field of study, the analysis and design of information systems, basic computer systems, and specific components of information storage and retrieval systems.

LS 606 Automation and the Library (3) F,Sp Waldhart

Introduction to the theory and practice of automation and its implications and application to libraries. A survey and evaluation of electronic and other automated systems for document processing in libraries.

LS 613 Library Systems Analysis (3) F,Sp Waldhart

Institutes and Short Courses: None listed.

Research Opportunities for Students: None.

Computer Facilities: IBM 360/65.

Admission Requirements:

Master's Programs: 2.75 undergraduate grade point average (on a 4.0 scale) and 900 total score on verbal and quantitative portions of G.R.E.

Foreign Students: No special requirements.

Tuition and Fees: Full-time in-state, $165 per semester; full-time out-of-state, $515; part-time in-state, $19 per semester hour; part-time out-of-state, $58.

Financial Aid: Graduate assistantships (2); work study assistantships (9); placement assistantships (1); special education instructional materials centers assistantships (2); Semmons scholarship (1); University fellowships.

LEHIGH UNIVERSITY
GRADUATE STUDIES AND RESEARCH IN THE INFORMATION SCIENCES

Bethlehem, Pennsylvania 18015
(215) 691-7000

Director of Program: Dr. Donald Hillman.

Description of Program: No information available at the time this directory went to press.

LONG ISLAND UNIVERSITY
PALMER GRADUATE LIBRARY SCHOOL

C.W. Post Center
Greenvale, New York 11548
(516) 299-2855

Director of Program: John T. Gillespie; Dean, Graduate Library School.

M. Bruce Maxian; Chairman, Information Science Curriculum (see faculty list below).

Description of Program: At present the information science program is in the developmental stage. A curriculum committee is considering six to nine credit hours of course work as a program for information science. The committee views information science as interdisciplinary in nature and is attempting not only to develop new courses of a specialized nature but also to emphasize integration of information science concepts into existing course offerings where appropriate.

Employment Preparation: Primarily, generation, input, processing, and storage of information; secondarily, education and research positions.

Degree:

M.S. in Library Science: 36 credit hours; required courses include Reference, Selection of Library Materials, Cataloging and Classification, and Research Techniques. Thesis optional.

Faculty:

Maxian, M. Bruce; Chairman, Information Science Curriculum and Assistant Professor; M.S. in Library Science, Long Island, 1966.

Students Specializing in Information Science: Introduction to Information Science was taken by 56 students in 1970-71.

Information Science Courses: (credit in semester hours)

L.S. 615 Introduction to Information Science (3) F,Sp,Su Maxian

Definition of the field, manual and machine systems for information handling, automatic indexing, systems analysis and problem solving, the computer, library automation, applications of automation to specific library operations, representative library mechanization projects.

Institutes and Short Courses: None.

Research Opportunities for Students: The Palmer Graduate Library School is in close proximity to the Suffolk Cooperative Library System (SCLS) and the Nassau Library System (NLS), both of which provide automated centralized processing to public libraries on Long Island. In addition, the Association of New York Libraries for Technical Services (ANYLTS), a pilot project for statewide centralized processing and technical services, and the vast number of specialized libraries and information centers in the New York City area and Long Island offer potential training centers to the student.

Computer Facilities: The C.W. Post Center Computer Center has an IBM 1130.

Admission Requirements:
M.S.: B average and 50th percentile in at least two G.R.E. scores.
Foreign Students: In addition to the above, proficiency in English as demonstrated by passing the T.O.E.F.L.

Tuition and Fees: $75 per credit hour plus University fees.

Financial Aid: 12 graduate assistantships and one full-time scholarship.

UNIVERSITY OF MARYLAND
COMPUTER SCIENCE CENTER

College Park, Maryland 20742
(301) 454-4259

Director of Program: Dr. William F. Atchison (see faculty list below).

Description of Program: The University of Maryland program is a computer science-oriented program which emphasizes both the theoretical and applied sides. At present the program is a graduate program only, offering both a master's and a doctor's degree. It consists of five areas of specialization, which are as follows: theory of computing, language and information processing, computer systems, numerical methods, and applications.

Employment Preparation: Information processing; programmer-analyst positions; systems design and analyses; management; teaching and research positions in junior colleges, colleges and universities, government, and industry.

Degrees:

M.S. in Computer Science with Thesis: Residence of at least 2 semesters, or equivalent; a minimum of 24 credit hours of approved course work with a B average; and a minimum of 12 credit hours at the 600 level. At least 12 credit hours must be in CMSC courses with at least 6 hours at the 600 level, and at least 9 credit hours may be taken outside computer science. A written qualifying examination, 6 hours of CMSC 799 (Thesis Research), a thesis, and a final oral examination covering the student's thesis and course work are required.

M.S. in Computer Science without Thesis: Residence of at least 2 semesters, or equivalent; a minimum of 33 credit hours of approved course work with a B average; and a minimum of 18 credit hours at the 600 level. At least 18 credit hours must be in CMSC courses with at least 12 credit hours at the 600 level. At least 6 credit hours of 600-level CMSC courses must be in one of the following areas of specialization: theory of computing, information processing, computer systems, numerical methods, or applications. At least 9 credit hours may be taken outside computer science. A written qualifying examination and an acceptable scholarly paper are required.

Ph.D. in Computer Science: At least 3 years of full-time graduate study and research, or equivalent; at least 1 year spent at the University; all courses at least at the 400 level; an average grade of B or better; no minimum number of credit hours required. However, at least 8 credit hours must be in 600-level courses, at least 9 credit hours may be taken outside computer science, and the courses must cover 1 or 2 coherent fields of knowledge which constitute a unified program. A comprehensive examination, an oral candidacy examination, at least 12 hours of CMSC 899 (Dissertation Research), a dissertation, and a final oral examination are required.

Faculty:

Atchison, William F.; Director and Professor; Ph.D. in Mathematics, Illinois, 1943; information storage and retrieval, curriculum development in computer and information science.

Basili, Victor R.; Assistant Professor; Ph.D. in Computer Science, 1970; syntax and semantics of programming languages, formal language definition, computer assisted instruction.

Deutsch, Edward S.; Assistant Professor; Ph.D. in Electrical Engineering, 1969; image-processing methods by computer, automatic character recognition.

Edmundson, Harold P.; Professor, jointly with the Department of Mathematics; Ph.D. in Mathematics, California at Los Angeles, 1953; mathematical and computational linguistics, automata theory, information theory.

Glasser, Robert G.; Professor, jointly with the Department of Physics and Astronomy; Ph.D. in Physics, Chicago, 1954; application of computers to physical problems, pattern recognition, epistemology.

Hagerty, Patrick E.; Assistant Professor; Ph.D. in Physics, Syracuse, 1969; computer systems.

Hamlet, Richard G.; Assistant Professor; Ph.D. in Computer Science, U. Washington, 1971; systems programming and automata theory.

Heilprin, Laurence B.; Professor, jointly with the School of Library and Information Services; Ph.D. in Physics, Harvard, 1941; theory and applications of information storage and retrieval, including its relation to communications and education, using a system-analysis and cybernetic approach.

Kanal, Laveen; Professor; Ph.D. in Electrical Engineering, Pennsylvania, 1960; pattern recognition and artificial intelligence.

Lay, Michael W.; Lecturer; Ph.D. in Computer Science, Ohio State, expected 1971; information storage and retrieval and systems programming.

Minker, Jack; Professor; Ph.D. in Mathematics, Pennsylvania, 1959; data management systems, information storage and retrieval, operations analysis, systems analysis and computer applications.

Noonan, Robert E.; Assistant Professor; Ph.D. in Computer Science, Purdue, 1971; programming languages and compilers.

Rosenfeld, Azriel; Research Professor; Ph.D. in Mathematics, Columbia, 1957; computer processing of pictorial information.

Zelkowitz, Marvin; Assistant Professor; Ph.D. in Computer Science, Cornell, 1971; programming languages and operating systems.

Students Specializing in Information Science: Approximately 180 master's and 90 doctoral candidates enrolled.

Information Science Courses:
CMSC 210 Language and Structure of Computers (no graduate credit)
CMSC 314 Introduction to Computer Languages and Systems (no graduate credit)

CMSC 340 Introduction to Discrete Structures (no graduate credit)
CMSC 410 Computer Organization (3)
CMSC 420 Data and Storage Structures (3)
CMSC 440 Structure of Programming Languages (3)
CMSC 600 Programming Systems (3)
CMSC 610 Computer Systems (3)
CMSC 620 Information Processing (3)
CMSC 640 Computability and Automata (3)
CMSC 700 Translation of Programming Languages (3)
CMSC 720 Information Retrieval (3)
CMSC 723 Computational Linguistics (3)
CMSC 725 Mathematical Linguistics (3)
CMSC 730 Artificial Intelligence (3)
CMSC 733 Computer Processing of Pictorial Information (3)
CMSC 737 Topics in Information Science (LBSC 737) (3)
CMSC 740 Automata Theory (3)
CMSC 745 Theory of Formal Languages (3)
CMSC 755 Theories of Information (3)
CMSC 840 Advanced Automata Theory (3)

Institutes and Short Courses: None listed.

Research Opportunities for Students: The Center has a number of government contracts and grants in the area of computer science. Many students are sent by government and industry, both on a part-time and full-time basis. Research areas include: numerical analysis; programming languages; systems programming; picture processing and pattern recognition; automation and simulation of computer design; information storage, retrieval and dissemination; and mathematical and computational linguistics.

Computer Facilities: UNIVAC 1108; IBM 7094.

Admission Requirements: Bachelor's degree from a regionally accredited college or university; grade point average of 3.0 on a 4.0 scale; mathematics through differential equations, abstract algebra, or logic; completion of CMSC 110 and 210, or their equivalent, with grades of B or better; and completion of 3 additional 400-level CMSC courses, or their equivalent, with a B or better average.

Tuition and Fees: State residents, $38 per semester hour; nonresidents, $48 per semester hour; Maryland teachers, $34 per semester hour; up to $90 in additional fees.

Financial Aid: A limited number of teaching and research assistantships are available. Graduate assistants and applicants for assistantships are automatically considered for other forms of available financial aid, such as fellowships and traineeships. In addition to assistantships administered by the Computer Science Center, resident graduate assistantships in the undergraduate dormitories are available for both men and women.

UNIVERSITY OF MARYLAND
SCHOOL OF LIBRARY AND INFORMATION SERVICES

College Park, Maryland 20742
(301) 454-3016

Director of Program: Margaret E. Chisholm; Dean and Associate Professor; M.L., Ph.D., U. Washington.

Description of Program: The School's concern is with the clarification and definition of the intellectual character of the field of library and information service first, and then with the development of its capability for translating these assessments into actual programs, courses and other activities. At the master's level the orientation is toward introducing the student to the enlarged responsibilities which librarians must be prepared for and committed to undertake during the years ahead. By means of a new information science option the student can choose to equip himself or herself with modern quantitative tools and techniques needed to understand and solve technical information problems. Library-oriented courses form the bulk of the offerings being understood as electives for the information science option.

An academic vehicle for work to the doctorate, begun in 1969, is designed to attract the most highly qualified candidates and to provide thorough-going advanced study and research preparation for a limited number of excellently prepared and carefully selected scholars committed to a career of teaching and research.

Employment Preparation: Specialists in the generation, input, processing, and storage of information; systems designers and managers; teachers and researchers.

Degrees:

M.L.S. with Information Science Option: 36 semester hours, of which 18 semester hours are required. LBSC 600, a 6-hour introductory course, is required of all master's candidates. LBSC 700,737,837, and 859D (3 hours each) must be taken if the information science option is selected. A thesis is not required.

Ph.D. in Library and Information Services: 60 course hours, including a course in research methods and 2 courses in statistics; one year of research on dissertation.

Faculty:

Dubester, Henry J.; Associate Professor; M.S. in Psychology, Columbia, 1946.
Caponio, Joseph F.; Lecturer (part-time); Ph.D. in Chemistry, Georgetown, 1959.
Costabile, Salvatore L.; Lecturer (part-time); M.S.L.S., Catholic U.
Doszkocs, Tamas; Lecturer (part-time); M.L.S., Maryland, 1968.

Heilprin, Laurence B.; Professor; M.A. in Physics, Ph.D. in Physics, Harvard, 1931, 1941.
Hodina, Alfred; Lecturer (part-time); M.S. in Physics, M.L.S., SUNY at Albany, 1962, 1964.
Kidd, Jerry S.; Professor; M.A. in Psychology, Ph.D. in Psychology, Northwestern, 1954, 1956.
King, Donald W.; Lecturer (part-time); M.S. in Statistics, Wyoming, 1960.
Korotkin, Arthur L.; Lecturer (part-time); M.A., Ph.D., Temple.
Kraft, Donald H.; Assistant Professor; M.S. in Industrial Engineering, Ph.D. in Industrial Engineering, Purdue, 1966, 1971.
Meadow, Charles T.; Lecturer (part-time); M.S. in Mathematics, Rochester, 1954.
Olson, Edwin E.; Professor; M.A. in Government, Ph.D. in Government, American U., 1961, 1966.
Walston, Claude E.; Lecturer (part-time); Ph.D. in Electrical Engineering, Ohio State, 1953.
Wellisch, Hans; Visiting Lecturer; A.L.A. (Associate, Library Association of Great Britain); Chartered Librarian, 1966.

Students Specializing in Information Science: A portion of the approximately 300 students enrolled in the School.

Information Science Courses: (credit in semester hours)

LBSC 627 Governmental Information Systems (3)
LBSC 650 Fundamentals of Documentation (2)
Includes the literature explosion; forms and sources of recorded information; problems of bibliographic control; literature searching (manual and mechanized); methods of disseminating information, including mechanical aids; the language barrier and translation, including mechanical translation.
LBSC 653 Construction and Maintenance of Indexing Languages and Thesauri (3) Sp Soergel, Wellisch
LBSC 656 Introduction to Information Retrieval Systems (3) F Soergel
Develops the basic principles underlying both manual and mechanized information retrieval systems (including the card catalog and even shelving by subject), thereby enabling the student to develop perspectives for the analysis and design of information retrieval systems and classifications or other indexing tools.
LBSC 657 Testing and Evaluation of Information Retrieval Systems (3) Soergel
LBSC 674 Introduction to Reprography (3) LaHood
Designed to give a basic understanding of all reprographic processes (printing, duplicating, copying, microreproduction). Includes consideration of book catalogs, catalog card reproduction and copyright issues.
LBSC 700 Introduction to Library Data Processing (3) F,Sp Walston, Doszkocs
LBSC 705 Advanced Data Processing for Libraries (3) F Meadow
Aimed toward critical analysis rather than the development of technical expertise.
LBSC 711 Programming Systems for Information Handling Applications (3)
LBSC 715 Library Systems Analysis (3) Sp Kraft
LBSC 737 Topics in Information Science (3) F,Sp Heilprin
LBSC 740 Seminar in Library and Information Networks (3) Olson
LBSC 757 Library and Information Service Facilities–Objectives and Performance (3) Olson
LBSC 807 Science Information and the Organization of Science (3) Kidd
LBSC 815 Library Systems (3) Kidd
LBSC 837 Seminar in Information Transfer (3) F, Sp Heilprin
LBSC 855 Analysis of the Library Service Process (3) Olson
LBSC 859A Data Processing Workshop in Library Applications (3) F,Sp Walston
LBSC 859C Library Operations Research (3) Sp Kraft, Heilprin
LBSC 859D Mathematics for Library Effectiveness (3) F Heilprin, Kraft

Institutes and Short Courses:

During the academic year a weekly program is conducted which affords the student body and faculty an opportunity to hear recognized scholars and professional experts discuss their work.

The **Library Administrators Development Program** is offered each summer and affords those in senior management positions an intensive two-week study sequence.

Numerous conferences and institutes have been held at the School in recent years, including:

The Automation of Bibliographic Services: June 1968, in conjunction with the Library of Congress, Project MARC and the Computer Science Center, and supported by the U.S. Office of Education.
Institute on Middle Management in Librarianship: June 1969, under a grant from the U.S. Office of Education.
Classification–Expanding Horizons: July 1969.
Change Frontiers: Implications for Librarianship: August 1969, supported by the U.S. Office of Education.
Urban Information Services: November 1969; a one-day institute.
The Informational, Educational and Social Responsibilities of Urban Library and Information Centers: December 1969, sponsored by a class in library service to the disadvantaged.
Subject Retrieval in the Seventies–New Directions: May 1971. Internationally noted speakers presented a balanced overview of the intensive research into subject retrieval methods that has been conducted in the U.S. as well as in the U.K. and in other European countries.

Research Opportunities for Students: Varies from year to year.

Computer Facilities: Univac 1108, IBM 7094, two IBM 1041's.

Admission Requirements: Bachelor's degree; demonstration of ability to do graduate work through G.R.E. scores, interview, etc.
Foreign Students: Same requirements as U.S. citizens.

Tuition and Fees: $38 per credit hour for residents of Maryland; $48 per credit hour for nonresidents.

Financial Aid: Varies from year to year.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
ELECTRICAL ENGINEERING DEPARTMENT

77 Massachusetts Avenue
Cambridge, Massachusetts 02139
(617) 864-6900, ext. 6021

Director of Program: Professor Robert M. Fano, Associate Department Head for Computer Science and Engineering (see faculty list below).

Description of Program: The program is computer science-oriented. Important areas of study include: computer systems, artificial intelligence, structures of computations, and automata theory. Considerable emphasis is placed on original research. The graduate program does not have specific subject requirements except for thesis. Students are encouraged to formulate their own program of study with the help of a faculty counselor.

Employment Preparation: Design and implementation of computer hardware and software; systems design; management of computer operations; basic and applied research; university teaching.

Degrees:

S.M. in Electrical Engineering: 42 units of graduate A subjects plus other graduate subjects for a total of 66 units; acceptable thesis.

Electrical Engineer: 90 units of graduate A work beyond the S.M. degree, for an overall total of 162 subject units. Thesis not required if candidate wrote S.M. thesis.

Ph.D. in Electrical Engineering: Completion of a program of advanced study, including a general examination; completion and oral defense of a thesis on original research.

Faculty:

Corbato, Fernando Jose; Professor of Electrical Engineering; Ph.D.
Dennis, Jack B.; Professor of Electrical Engineering; Sc.D.
Dertouzos, Michael L.; Associate Professor of Electrical Engineering; Ph.D.
Donovan, John J.; Associate Professor of Electrical Engineering; Ph.D.
Fano, Robert M.; Director; Ford Professor of Engineering; Sc.D.
Fredkin, Edward; Professor of Electrical Engineering.
Hennie, Frederick Clair, III; Professor of Electrical Engineering; Sc.D.
Hewitt, Carl E.; Assistant Professor of Electrical Engineering; Ph.D.
Lee, Francis F.; Professor of Electrical Engineering; Ph.D.
Licklider, Joseph C.; Professor of Electrical Engineering; Ph.D.
Liu, Chung L.; Associate Professor of Electrical Engineering; Sc.D.
Meyer, Albert R.; Assistant Professor of Electrical Engineering; Ph.D.
Minsky, Marvin L.; Professor of Electrical Engineering; Ph.D.
Moses, Joel; Assistant Professor of Electrical Engineering; Ph.D.
O'Neil, Patrick E.; Assistant Professor of Electrical Engineering; Ph.D.
Patil, Suhas S.; Assistant Professor of Electrical Engineering; Sc.D.
Saltzer, Jerome H.; Associate Professor of Electrical Engineering; Sc.D.
Troxel, Donald E.; Associate Professor of Electrical Engineering; Ph.D.
Weizenbaum, Joseph; Professor of Computer Science; S.M.
Winston, Patrick H.; Assistant Professor of Electrical Engineering; Ph.D.
Winograd, Terry A.; Assistant Professor of Electrical Engineering; Ph.D.

Students Specializing in Information Science: 50 master's and 41 doctoral candidates enrolled.

Information Science Courses:

COMPUTER PROGRAMMING AND SYSTEMS

6.233 Information Systems (12) Sp
6.251 Digital Computer Programming Systems (12) F,Sp
6.252 Programming Linguistics (12) F,Sp
6.531 Principles of Programming Language Processors (12) F (graduate A subject)
6.535 Structure of Computing Systems (12) Sp (graduate A subject)
15.571T Advanced Computer Systems (12) F,Sp (graduate A subject)
15.568 Management Information Systems (9) F
15.569 Issues in Information System Design (9) Sp

SIGNAL PROCESSING

6.05 Circuits, Signals and Systems (12) F,Sp
6.275 Introduction to Signal Processing (12) Sp
6.611 Digital Processing of Signals (12) F (graduate A subject)
6.613 Image Processing (12) Sp (graduate A subject)
6.13 Pattern Recognition (12) F

AUTOMATA THEORY AND FORMAL LINGUISTICS

6.253 Theoretical Models for Computation (12) F
The relationship of various abstract machine models (automata) to corresponding models of language (grammars); the formal material most pertinent to the design of parsing algorithms used in compilers.
18.427 Formal Language Theory (12) F (graduate A subject)
18.428 Advanced Topics in Language and Automata Theory (arranged) Sp (graduate A subject)
23.772 Mathematical Models in Linguistics (12) Sp

PROBABILITY AND INFORMATION THEORY

6.536 Probabilistic Models in Systems Engineering and Operations Research Sp (graduate A subject)
6.574 Transmission of Information (12) F,Sp (graduate A subject)

ARTIFICIAL INTELLIGENCE

6.258/18.436 Introduction to Artificial Intelligence (12) Sp Minsky
6.544 Heuristic Programming and Artificial Intelligence (12) Sp Winston
18.435 Mathematical Topics in Artificial Intelligence (arranged) Sp Papert (graduate A subject)
6.545 Topics in Artificial Intelligence (arranged) Sp (graduate A subject)
18.405 Mathematical Learning Theory (12) F Grossberg (graduate A subject)

PHILOSOPHY AND LINGUISTICS

23.721 Semantics (12) F (graduate A subject)
23.751 Introduction to Linguistics I: Syntax (24) F
23.752 Introduction to Linguistics III: Theory of Grammar (12) Sp
24.727 Logic and Language (12) F (graduate A subject)
24.723 Semantics (12) F (graduate A subject)

Institutes and Short Courses: Project MAC Seminar–held Tuesdays and/or Thursdays, 3-5p.m. Invited speakers, faculty, and doctoral students give presentations and conduct discussions. In addition, seminars on current research are organized by Project MAC, the Artificial Intelligence Laboratory, and other research groups. Guest speakers are often invited.

Research Opportunities for Students: Government research contracts, industrial research contracts, etc.

Computer Facilities: GE 645-Multics; IBM 7094-CTSS; IBM 360/65/40-OS/ASP and IBM 360/67-CP; several smaller installations such as IBM 1130's, DEC PDP-6's, DEC PDP-10's and others.

Admission Requirements:
S.M.: S.B.
E.E.: One year of professional training beyond the S.M.
Sc.D. and Ph.D.: S.M. or S.B.
Foreign Students: Pass T.O.E.F.L. for entrance or have had instruction in English for many years.

Tuition and Fees: $2650 for academic year and $890 for Summer Session.

Financial Aid: Scholarship, fellowships, teaching and research assistantships.

McGILL UNIVERSITY
GRADUATE SCHOOL OF LIBRARY SCIENCE

3459 McTavish Street
Montreal 2, Quebec, Canada
(514) 392-5934

Director of Program: Dr. Violet Coughlin; Director.

Description of Program: No information available at the time this directory went to press.

UNIVERSITY OF MICHIGAN
DEPARTMENT OF COMPUTER AND COMMUNICATION SCIENCES

4028 Literature, Science & Arts Bldg., State Street
Ann Arbor, Michigan 48104
(313) 764-8504

Director of Program: Dr. John H. Holland (see faculty list below).

Description of Program: The computer and communication sciences are concerned with understanding, on a theoretical basis, the communication and processing of information by both natural and artificial systems. Two general areas of study are particularly important for these sciences: (1) the technical study of natural and artificial languages as modes of communication, and (2) the investigation of information processing, both in natural and in artificial systems. Natural systems include the heart, the central nervous system, genetic and evolutionary systems, and behaviorial systems; artificial systems include digital and analog computers, telephone networks and television systems. In the technical study of languages, attention is given both to natural language and to various types of artificial languages, including codes used in communication sciences, instructional and design languages for digital computers, and the formal languages of mathematical logic. In the investigation of information processing systems, attention is directed toward fixed and growing automata, adaptive systems, nerve nets, evolutionary systems, adaptive behavioral systems, and language systems.

The Michigan program is unique in its breadth and connections with natural systems. All students receive some instruction in the informational and computer aspects of natural languages, biological systems, and behavioral systems, and considerable research is being done in these areas by faculty and students.

Employment Preparation: Not listed.

Degrees:
M.S. in Computer and Communication Sciences: 30 hours beyond the bachelor's degree and 8 of the 10 courses in the core curriculum. The core curriculum consists of Foundations of the Computer and Communication Sciences, Communication

Electronics, Digital Computers, Theory of Automata, Man as an Information Processing System, Information Theory, Theory of Natural Language Structure, Informational Aspects of Biochemistry and Physiology, Introduction to Linear Algebra, and Mathematical Theory of Probability I.

Ph.D.: First stage: core curriculum; qualifying examination. Second stage: courses in a specialized area, preparatory to writing the Ph.D. thesis; summary report; preliminary examination. Third stage: Ph.D. thesis; oral examination. The first two stages normally take a year and a half each, the third stage about 2 years. Either 4 semesters of Russian, French, or German, or 2 semesters each of 2 of them, are required.

Faculty:

Arden, Bruce W.; Professor of Computer & Communication sciences; Associate Director of the Computing Center; M.A. in Mathematics, 1955; Ph.D. in Electrical Engineering, 1965.

Burks, Arthur W.; Professor of Computer & Communication Sciences, and of Philosophy; Director of the Logic of Computer Group; M.A. in Mathematics, 1955; (on leave 1971-72).

Flanigan, Larry K.; Associate Professor of Computer & Communication Sciences; Research Associate, Computing Center; M.A. in Philosophy, 1937; Ph.D. in Philosophy, 1941.

Friedman, Joyce B.; Associate Professor of Computer & Communication Sciences; M.S. in Management Science, 1960; M.S. in Communication Sciences, 1962; Ph.D. in Communication Sciences, 1965.

Galler, Bernard A.; Professor of Computer & Communication Sciences, and of Mathematics; Associate Director of the Computing Center; A.M. in Mathematics, 1952; Ph.D. in Mathematics, 1965.

Holland, John H.; Acting Chairman of the Department of Computer & Communication Sciences, 1971-72; Professor of Computer & Communication Sciences; Associate Director of the Logic of Computer Group; M.A. in Mathematics, 1954; Ph.D. in Communication Sciences, 1959.

Kaplan, Stephen; Professor of Computer & Communication Sciences, and of Psychology; Ph.D. in Psychology, 1962.

Meyer, John F.; Associate Professor of Computer & Communication Sciences, and of Electrical Engineering; M.S.E.E. in Electrical Engineering, 1958; Ph.D. in Communication Sciences, 1967.

O'Malley, Michael H.; Assistant Professor of Computer & Communication Sciences, and of Linguistics; M.S. in Electrical Engineering, 1961; A.M. in Communication Sciences, 1963; Ph.D. in Communication Sciences, 1968.

Reitman, Walter; Professor of Computer & Communication Sciences, and of Psychology; M.S. in Psychology, 1954; Ph.D. in Psychology, 1957.

Riddle, William E.; Lecturer of Computer & Communication Sciences; M.S. in Computer Sciences, 1966.

Zeigler, Bernard P.; Assistant Professor of Computer & Communication Sciences; M.S. in Electrical Engineering, 1964; Ph.D. in Computer & Communication Sciences, 1968.

Students Specializing in Information Science: No data given; 15 master's and 46 doctoral candidates enrolled.

Information Science Courses:

CCS 410 **Digital and Analog Systems** (3) F
CCS 476 **Data Structures** (3) F,Sp Riddle
CCS 522 **Theory of Automata** (3) Sp Zeigler
CCS 524 **Adaptive Systems** (3) Sp Holland
CCS 525 **Man as in Information Processing System (Psy. 525)** (3) F Reitman
CCS 530 **Information Theory (CICE 530)** (3)
CCS 541 **Theory of Natural Language Structure** (3) Sp O'Malley
CCS 542 **Mathematical Linguistics** (3) Sp
CCS 544 **Logic, Grammar and Information Processing** (3) F O'Malley
CCS 565 **Artificial Intelligence** (3) Sp Reitman
CCS 573 **Operating Systems** (3) F,Sp Flanigan, Galler
CCS 574 **Simulation Languages and Techniques** (3) F Flanigan
CCS 575 **Data Structures and Compiling Techniques** (3) Sp
CCS 580 **Informational Aspects of Biochemistry and Physiology** (3) Sp Swain
CCS 582 **Biological Sensory Systems** (3) Sp
CCS 590 **Computational Logic**
CCS 662 **Algebraic Theory of Automata** (3) Sp Zeigler
CCS 624 **Theory of Adaptive Systems** (3) F Holland
CCS 640 **Neural Models and Psychological Processes (Psy. 640)** (3) Sp Kaplan

Among the processes considered are perceiving, thinking, learning, sleeping, dreaming, searching, predicting, planning, and various other functions useful to an effective natural system.

CCS 641 **Computational Linguistics**
CCS 644 **Theories of Grammar** (3) F
CCS 646 **Acoustic Foundations for Computational Speech Processing** (3) F O'Malley
CCS 673 **Advanced System Programming** (3) Sp Arden
CCS 801 **Seminar in Natural Languages** (3) F O'Malley
CCS 802 **Seminar in Programming** (1-3) F Arden
CCS 803 **Seminar in Programming** (1-3) Sp Galler
CCS 804 **Seminar in Automata Theory** (3) F
CCS 805 **Seminar in Adaptive Systems Theory** (3) Sp Holland
CCS 807 **Artificial Intelligence Seminar**
CCS 865 **Artificial Intelligence Seminar** (3) F Reitman

Institutes and Short Courses: None listed.

Research Opportunities for Students: Government research projects.

Computer Facilities:

Computing Center: IBM 360/67 with CalComp 780/763 Digital Plotter and 120 remote terminals.

Logic of Computers Group: 32K IBM 1800, 8K PDP-7 with cathode ray display.
Simulation Center: Ad/4 analog computer, PDP-9 digital computer, several AD PR-64 analog computers, CDC 160-A digital computers.

Admission Requirements:
M.S. and Ph.D.: Bachelor's degree or equivalent in CCS or in a related area; mathematics through integral calculus; one year of college physics or college chemistry; introductory courses in advanced calculus, and computation are desirable; Graduate Record Examination Scores are necessary before applications for admission will be considered; Aptitude Test and the Advanced Test of college major.

Tuition and Fees: $2400 for out-of-state; $800 for in-state or tuition-exempt, 2 terms.

Financial Aid: Scholarships, fellowships, teaching and research assistantships available.

UNIVERSITY OF MICHIGAN
DEPARTMENT OF INDUSTRIAL ENGINEERING

Room 231 W. Engineering Building
Ann Arbor, Michigan 48104
(313) 764-6474

Director of Program: Professor Daniel Teichroew; Chairman and Professor; Ph.D., North Carolina, 1953; management science and computer techniques.

Professor James A. Gage; Graduate (and Undergraduate) Program Advisor; Professor; M.S., Wisconsin, 1948; small plant management, engineering economy.

Description of Program: Industrial engineering is the design and control of work, in the general sense of purposeful, productive human activity in all of its organized forms. Thus, the industrial engineer may be concerned with the work of a factory, an individual artisan, a machine, or a system that exists in manufacturing, in travel and transportation, in communication, in the professions, in government, or in the utilization of natural resources. The curriculum and research in the Department of Industrial Engineering is structured to provide a background of knowledge in and also an integration of many areas of knowledge. The principal areas are those associated with optimization, stochastic processes, operations research, human factors, computers and information processing, and management engineering.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research positions.

Degrees:
M.S. in Industrial Engineering: 30 semester hours of graduate course work, plus any deficiencies required; 18 of these must be industrial engineering courses, 6 must be cognate, and 6 may be electives. Major areas of concentration include Operations Research and Management Sciences, Human Factors and Management Engineering, Process Systems Design, or Information and Data Processing Systems Analysis and Design.
Professional Degree in Industrial Engineering: A minimum of 30 credit hours of work beyond the M.S. or its equivalent, with a grade point average of B or better. The total shall include at least 24 hours in the Department, at least 3 courses in cognate fields other than mathematics, at least 9 hours in mathematics beyond the requirements for the undergraduate degree, and at least 6 hours of research or a design or development problem, including a written report.
Ph.D. in Industrial Engineering: Entering with B.S.–24 to 36 hours of graduate study, or entering with M.S.–12 to 36 hours of graduate study; oral preliminary examination; doctoral thesis; defense of thesis.

Faculty:
Johnson, Clyde W.; Professor; A.B., Michigan, 1931; hospital management systems.
Pollock, Stephen M.; Associate Professor; Ph.D., M.I.T.; operations research applications in public systems, search and detection theory, sequential decision theory, applications.
Sibley, Edgar H.; Associate Professor; Sc.D., M.I.T., 1967; information processing, system design.

Students Specializing in Information Science: Approximately 100 master's and 35 doctoral candidates enrolled.

Information Science Courses: (credit in semester hours)
IE 333 Human Performance (3) F,W
IE 373 Data Processing (3) F,W
IE 433 Human Performance
IE 460 Decision Analysis I (3) W
IE 473 Information Processing Systems (3) F,W
IE 478 Computer Graphics I (3) F,W
IE 495 Seminar in Hospital Systems (3) F,W
IE 510 Linear Programming I (Math 561, BA Stat 518) (3) F,W,Sp,Su
IE 560 Decision Analysis II (3) F
IE 573 Design and Construction of Large Scale Administrative Systems (3) F
IE 575 Information Processing Techniques for Administrative Systems (3) W
IE 578 Computer Graphics II (3) F
IE 610 Linear Programming II (Math 660) (3) W
IE 611 Nonlinear Programming I (Math 663) (3) F
IE 633 Human Factors in Engineering Systems II (3) W
IE 660 Special Topics in Decision Analysis (3) W
IE 673 Administrative Information Processing Systems Analysis I (3) W

IE 711 **Nonlinear Programming I (Math 760)** (3) W
IE 773 **Administrative Information Processing Systems Analysis II** (1-3) F
IE 801 **Research Seminar in Hospital and Medical Systems (Hosp Adm 801)** (to be arranged) F,W,Sp,Su
IE 836 **Seminar in Human Performance** (to be arranged) F,W
IE 873 **Seminar in Administrative Information Processing Systems** (1-3) W
IE 878 **Seminar in Computer Graphics** (1-3) F

Institutes and Short Courses: During the academic year, the Department sponsors faculty-graduate student seminars on topics of mutual interest, e.g., individual research, summaries of sponsored research progress, etc. Attendance is voluntary. There are also research project seminars and workshops, and a number of short courses in the Engineering Summer Conferences Program.

Research Opportunities for Students: Government research, industrial institution contracts, etc.

Computer Facilities: Computing Center on campus.

Admission Requirements:

M.S.: Must have a bachelor's degree in industrial engineering, physics, mathematics, or any other approved department, or the equivalent thereof.

Professional Degree: Master's degree, or its equivalent. Also must complete steering review.

Ph.D.: Must pass a steering review given by the Department. If entering with a B.S., must take 24 to 36 hours of graduate work to prepare for the steering review; if entering with an M.S., must take 12 to 36 hours in preparation for the review.

Foreign Students: Must present the equivalent of a B.S. degree in an approved area; must pass the English test; must be able to support himself for at least one year of graduate work, plus living expenses.

Tuition and Fees: Resident full-time, $400 per year; nonresident full-time, $1120 per year.

Financial Aid: National Science Foundation graduate fellowships ($2400-$2800, plus $500 for each dependent); National Science Foundation traineeships ($2400-$2800, plus provision for dependents); Highway Safety training fellowships ($2400-$3000 plus $500 per dependent); W.K. Kellogg Foundation Fellowships for students interested in obtaining a Ph.D. in hospital systems ($3000-$5000 on a 12-month basis); Upjohn Company industrial engineering graduate fellowship ($4000); a number of teaching fellowships ($1500-$4000 per year); teaching assistantships; research assistantships (up to $3100 for 8 months); several fellowships available through the school of graduate studies.

UNIVERSITY OF MICHIGAN
SCHOOL OF LIBRARY SCIENCE

Ann Arbor, Michigan 48104
(313) 764-9376

Director of Program: Russell E. Bidlack; Dean.

Description of Program: The University of Michigan School of Library Science currently has a library-oriented curriculum designed to prepare students for a professional career. That portion of the curriculum devoted to information science is intended to acquaint students with modern methods of information processing, and it includes the basic theory and practice of information storage, retrieval, and dissemination as well as an examination of problems involved in the automation of conventional library processes.

Employment Preparation: Input, processing, and storage; document retrieval; library administration; education for librarianship; bibliographic research.

Degrees:

A.M.L.S.: 30 credit hours. Required courses include The Library as a Public Service Institution; Classification and Cataloging; Bibliography and Principles of Book Selection; General Reference Materials; and Bibliography of the Social Sciences, or Bibliography of Science, or Bibliography of the Humanities. No thesis is required.

Ph.D. in Library Science: In addition to the master's requirements a second bibliography course must be taken, plus the following: History of Books and Printing; History of Publishing; History of Libraries; Library of Congress Classification; National and Regional Bibliography; Advanced Studies in Cataloging; and seminars specifically designed for doctoral students. A dissertation is required.

Faculty:

Davis, Charles H.; Associate Professor; A.M. in Library Science, Ph.D. in Library and Information Science, Indiana, 1966, 1969.

Students Specializing in Information Science: No data given; approximately 280 master's and 14 doctoral candidates enrolled in the School.

Information Science Courses: (credit in semester hours)

L.S. 550 **Introduction to Documentation and Information Retrieval** (2) F,W Davis
Examines basic theory and surveys practices and problems relating to processing, storage, and retrieval of information.

L.S. 561 **Data Processing for Libraries** (2) F,W Davis
An introduction to computer programming, punched card equipment, and reprographic techniques, with illustrations of their use in libraries and information centers.

Institutes and Short Courses: None listed.

Research Opportunities for Students: Some are available, but there are at present no formal cooperative programs.

Computer Facilities: IBM 360/67. A time-sharing terminal is located in the School of Library Science.

Admission Requirements:

A.M.L.S.: Possession of a bachelor's degree from an approved college or university; a grade point average of at least 3.0 on a 4.0 scale; at least 90 credit hours in liberal arts (deficiencies can be made up).

Ph.D.: Possession of the A.M.L.S. from the University of Michigan or an equivalent degree from another library school accredited by the American Library Association; a master's degree in a subject field; a superior graduate record (at least half A, and a minimum grade point average of 6.5, with B plus valued at 6 and A minus at 7.

Foreign Students: Applicants will be admitted only if their score on the English Language Institute test is high enough to permit them to carry a full course load. Foreign students can meet the admission requirements for the doctoral program if they have a degree equivalent to the A.M.L.S. from an approved foreign institution.

Tuition and Fees: Full program fees are $400 per academic term for Michigan residents, $1120 for nonresidents. During the Spring or Summer half-terms these fees are $200 and $560, respectively.

Financial Aid: Library work-study scholarships offered by the University of Michigan Library for students enrolled half-time ($4000 in 12 monthly installments); scholarships and fellowships ($500-$2000); grants-in-aid for sudden financial emergencies.

UNIVERSITY OF MINNESOTA
LIBRARY SCHOOL

3 Walter Library
Minneapolis, Minnesota 55455
(612) 373-3100

Director of Program: David K. Berninghausen; Director; B.S.L.S., Columbia, 1941; M.A. in English and Philosophy, Drake, 1943.

Description of Program: The program for the M.A. degree with a major in library science offers the basic preparation for careers in all types of libraries–academic, public, school, and special–by providing a foundation of general professional knowledge and an introduction to an area of special interest. Each student is assigned to a faculty advisor who will help him to plan an individual program of study designed according to the student's ability, background, and career goals. Considerable flexibility is permitted in the designing of most programs.

In addition to information science courses offered by the Library School, students may take related work offered by the Department of Computer, Information and Control Sciences (in the Institute of Technology) and by the Management Information Systems unit within the School of Business Administration.

Employment Preparation: Specialist positions, such as input and processing; education and research positions.

Degrees:

M.A. in Library Science: 54 quarter credit hours; Lib. 5-101, 5-221, 5-401, 8-990, thesis or 3-9 credits of library research paper required.

Specialist Certificate: 45 quarter credit hours; 9 credits of research paper required.

Ph.D. in Library Science: No minimum or maximum credit hour requirements.

Faculty:

Brekhus, Elmo; Assistant Professor; M.A. in Library Science, Minnesota, 1957, 1966.
Simonton, Wesley; Professor; B.S.L.S., M.S.L.S., Columbia, 1946, 1948; Ph.D. in Library Science, Illinois, 1960.

Students Specializing in Information Science: No data given; approximately 200 graduate students enrolled in the School.

Information Science Courses: (credit in quarter hours)

8-402 Organization of Information II (4) W,Sp Brekhus, Simonton
Includes advanced cataloging, bibliography, and indexing, as well as information retrieval.

8-411 Library Mechanization and Systems Analysis (4) W Brekhus

Institutes and Short Courses: None listed.

Research Opportunities for Students: Research opportunities available in Diabetes Documentation Center.

Computer Facilities: IBM 360/30; PDP-12; CDC 6600, 6400, 3300, 3200.

Admission Requirements:

M.A.: B.A. from recognized college or university; evidence of high academic achievement; satisfactory score on the Miller Analogies Test.

Specialist Certificate: As for admission at doctoral level.

Ph.D.: High academic performance in undergraduate and graduate study; satisfactory score on the Miller Analogies Test; fifth-year library science degree from a school with an accredited program; two years professional experience.

Foreign Students: As above. If native language is not English, must show acceptable level of proficiency on T.O.E.F.L.

Tuition and Fees: Resident, full-time (more than 6 credits), $184 per quarter; resident, part-time, $92 per quarter; non-resident, full-time, $457 per quarter; non-resident, part-time, $229 per quarter.

Financial Aid: The Irene Fraser Jackson Memorial Fellowship and the H.W. Wilson Memorial Fellowship, each of $1,000; a limited number of awards of lesser value. Recipients of these fellowships are required to pay tuition.

UNIVERSITY OF MISSOURI AT COLUMBIA
SCHOOL OF LIBRARY AND INFORMATIONAL SCIENCE

109 Stewart Hall
Columbia, Missouri 65201
(314) 449-9320

Director of Program: Charles W. Sargent; Chairman (see faculty list below).

Description of Program: A Department of Information Science has been established in the School of Library and Informational Science, but the graduate program has not yet been approved. As conceived, information science is a theoretical subject with various applied aspects. Because this program is currently only in the planning stages, only limited information is available.

Faculty:

Sargent, Charles W.; Associate Professor; A.M.L.S., Michigan, 1953; Ph.D. in History, New Mexico, 1964.
Shurtleff, Donald; Director, University Computational Center; Professor; Ph.D. in Electrical Engineering, Worcester Polytechnic, 1968.
Miller, Edward; Assistant Professor; M.A.L.S., Oklahoma, 1965; Ph.D. in Industrial Engineering, 1971.

Computer Facilities: IBM 360/65.

UNIVERSITY OF MISSOURI AT ROLLA
COMPUTER SCIENCE DEPARTMENT

109 Harris Hall
Rolla, Missouri 65401
(314) 341-4491

Director of Program: Dr. Billy E. Gillett; Chairman (see faculty list below).

Description of Program: The Department of Computer Science offers graduate study leading to the Master of Science degree. The extensive program of courses in computer science emphasizes mathematical methods of digital computing, digital computer programming languages, numerical and statistical methods, computer systems, simulation techniques, linear programming, operations research, information retrieval, and business data processing. The primary objective of these courses is to develop a thorough understanding of the methods of solving complicated engineering, science, and management problems on high-speed computer systems.

Employment Preparation: Business; industry; teaching.

Degrees:

M.S. in Computer Science with Thesis: A minimum of 30 hours of graduate credit; preferably, at least 9 hours should be from the 400 level, and at least 5 hours from outside the department. At least 6 hours must be devoted to graduate research, CSc 490. However, the total credit in Research, Special Problems, Special Investigations, Special Readings, and Graduate Seminar must not exceed 12 hours. A thesis and oral defense of the thesis are required.

M.S. in Computer Science without Thesis: A minimum of 33 hours of graduate credit with at least 9 hours of 400-level courses and at least 6 hours from outside the department. The total credit in Special Problems, Special Investigations, Special Readings, and Graduate Seminar must not exceed 4 hours. A final written comprehensive examination is required.

Ph.D. in Mathematics with emphasis in Computer Science: The equivalent of 3 years (6 semesters) of full-time work beyond the bachelor's degree, or 4 semesters of full-time work beyond the master's degree. Research for the doctoral thesis will normally constitute from one-third to two-thirds of the doctoral program. One modern foreign language (normally German, French, or Russian) must be translated readily at sight. In addition, a written and oral comprehensive examination, the dissertation, and a final examination (oral defense of the dissertation) are required.

Faculty:

Alcorn, H.R.; M.S., Missouri at Rolla, 1961; computer systems, programming languages.
Byers, J.K.; Ph.D., Arkansas, 1970; operations research.
Dearth, D.W.; M.S., Missouri at Rolla, 1968; computer systems, operations research.
DeKock, A.R.; Ph.D., South Dakota, 1968; computer-assisted instruction, programming languages.
Gillett, Billy E.; Chairman; Ph.D., Oklahoma State, 1964; operations research.
Stager, S.P.; M.S., Missouri at Rolla, 1970; computer systems.
Tucker, A.B.; Ph.D., Northwestern, 1970; programming languages.

Students Specializing in Information Science: Approximately 40 master's and 20 doctoral candidates enrolled.

Information Science Courses: (credit in semester hours)

CSc 163 Block Structured Language Programming (3) F,Sp,Su
CSc 168 Business Data Processing Techniques (3) F,Sp
CSc 183 Assembly Language Programming (3) F,Sp,Su
CSc 253 Data Structures and Logic (3) F,Sp
CSc 264 Special Purpose Languages (3) F,Sp
CSc 283 Introduction to an Operating System (3) F,Sp
CSc 333 The Structure of a Compiler (3) F
CSc 339 Techniques of Information Processing and Retrieval (3) Sp
CSc 361 Structure of Operating Systems (3) F
CSc 430 Formal Languages and Syntax (3) Sp
CSc 433 The Structure of Compilers for Algorithmic Languages (3) Sp
CSc 447 Artificial Intelligence and Pattern Recognition (3) Sp
CSc 465 Integer Programming and Network Flows (3) Sp

Institutes and Short Courses: None listed.

Research Opportunities for Students: NSF traineeships, Gulf Oil fellowships, departmental assistantships (teaching and research), co-op program with industry.

Computer Facilities: IBM 360/50; communications terminals with both teletypewriter and typewriter input/output provide remote utilization; Calcomp Model 566 high-speed digital incremental plotter; Calcomp 750 magnetic-tape control unit.

Admission Requirements:

M.S. and Ph.D.: A B.S. degree in computer science is not required for admission as a regular graduate student in computer science; however, the candidate's undergraduate background should include at least 9 semester hours of digital computer programming and at least 3 semester hours of each of the following: statistics; linear or matrix algebra; and numerical analysis. If an applicant has a mathematics background with only two or three of the above courses, he can be considered for admission as a Special Graduate Student.

Foreign Students: Requirements same as for U.S. students; in addition, applicant must be in the upper third of his graduating class. Foreign students are responsible for their own financial needs since graduate assistantships are not available.

Tuition and Fees: Average resident fees, $559 per year; additional nonresident tuition, $400 per year.

Financial Aid: A number of graduate teaching and research assistantships, at $2800 per 9-month academic year; other types of financial assistance available through the Financial Aids Department.

UNIVERSITE DE MONTREAL
ECOLE DE BIBLIOTHECONOMIE

C.P. 6128
Montreal 101, Quebec, Canada
(514) 343-6044

Director of Program: Dr. Richard-K. Gardner (see faculty list below).

Description of Program: This is the only French-language library science program accredited by the American Library Association. A limited program of courses in information science, oriented towards the basic needs of French Canadian libraries, is offered. This program is in the early developmental stage as the first full-time professor in this field has just been acquired. Considerable development of the program is foreseen for 1972-73.

Employment Preparation: French-speaking librarians.

Degree:

Maitrise en bibliothéconomie: 24 hours are required courses. They are (3 credits each): La bibliothéconomie, Choix de documents et services au public, Organization systématique des fonds I, Administration des bibliothèques, Methodologie de la recherche, La Bibliothèque et l'ordinateur, and at least two of the following: Accroissement des fonds, Organisation systématique des fonds II, Administration et gestion des bibliothèques, and Services de référence et de bibliographie. Thesis is optional.

Faculty:

Aird, M. Jacques; Chargé d'enseignement; Lic. Opt., B. Bibl., Montréal, 1968, 1969.
Courrier, Yves-G.; Chargé d'enseignement; L. ès L., M. ès l., Paris-Nanterre, 1967, 1968; Diplôme supérieur de bibliothécaires, France, 1969.
Gardner, Richard-K.; Directeur et Professeur titulaire; diplôme de l'Ecole des professeurs de français à l'étranger, Sorbonne, 1954; M.L.S., Ph.D., Case Western Reserve, 1955, 1968.
Rolland-Thomas, (Mme.) Paule; Professeur agrégé; B. Bibl., M.A., Montréal, 1952, 1957; M.L.S., McGill, 1965.

Students Specializing in Information Science: No data given; approximately 130 master's candidates enrolled.

Information Science Courses: (credit in semester hours)

BIBL 644 Documentation audio-visuelle (3) F Szpakowska
BIBL 645 Sciences de l'information (3) F Courrier
BIBL 652 Théorie de la classification (3) Rolland-Thomas (not given 1971-72)
BIBL 653L Indexation (3) Sp Aird
BIBL 654 Analyse des systèmes (3) Courrier (not given 1971-72)
BIBL 675 Moyens de communication sociale et bibliothèque (3) Sp Lajeunesse
BIBL 680 Seminaire sur l'automisation des bibliothèques (3) Sp Courrier

Institutes and Short Courses: None.

Research Opportunities for Students: To be developed.

Computer Facilities: CDC-6400, CDC-3100.

Admission Requirements:

Master's Program: First university degree with at least a B average (U.S.).

Foreign Students: As this is a French-language university, all foreign students must be fluent in French as well as in English.

Tuition and Fees: $430.

Financial Aid: The Province of Quebec gives scholarships to Quebec residents. The school itself has no scholarship funds.

UNIVERSITY OF NEVADA

Reno, Nevada 89507

Description of Program: A plan to establish an interdisciplinary master's program in Information and Computer Science has been approved by the Board of Regents but money is not available this year to fund it. Because this program is currently only in the planning stages, further information is not yet available.

CITY UNIVERSITY OF NEW YORK
CENTER FOR THE ADVANCEMENT OF LIBRARY-INFORMATION SCIENCE

City University Graduate Division
33 West 42nd Street
New York, New York 10036
(212) 790-4413

Director of Program: Vivian S. Sessions (see faculty list below).

Description of Program: The Professional Development Program is designed for practicing librarians and other information specialists who wish to become better acquainted with computer-inspired developments in their field. It is also open to specialists in other fields who wish to broaden their knowledge in the area of information theory and applications. It may best be defined as a mixture of a theoretically-oriented curriculum and a systems-oriented curriculum.

Employment Preparation: Program is designed to keep current practitioners up-to-date in their fields as well as to prepare others for new professional skills.

Degrees: Not a degree program; courses are at post-master's level.

Faculty:

Bradley, William; Adjunct Lecturer; B.B.A., Manhattan, 1963.
Brenner, Everett H.; Adjunct Professor; M.A. in German and Chemistry, Michigan, 1950.
Fisher, Stanley; Adjunct Lecturer; M.S. in Social Group Work, Columbia, 1953.
Sessions, Vivian S.; Associate Professor; M.A. in History, Michigan, 1948; M.S. in Library Science, Columbia, 1959.
Sloan, Lynda W.; Lecturer; B.S. in Mathematics and Education, New York U., 1963.

Students Specializing in Information Science: 130 non-degree students.

Information Science Courses:

Mathematical Tools for Library-Information Science Sloan

Document Access Systems Brenner

This course reviews the leading methods of classifying, abstracting, and indexing books, articles, and reports of various kinds. It compares the traditional techniques for creating bibliographic access systems with those devised for the specific purpose of utilizing data processing equipment.

Introduction to Information Retrieval Sessions

Systems designed specifically for retrospective searching are differentiated from those that serve primarily a current awareness function (SDI). The class submits queries to such facilities as ERIC, MEDLARS, and CA CONDENSATES. Students create and evaluate a model information retrieval system.

Computer Programming Concepts Sloan

Indexing Strategy Sessions

Systems Concepts Fisher

Institutes and Short Courses: None.

Research Opportunities for Students: Contracts pending.

Computer Facilities: IBM 360/50; IBM 1130; PDP-8.

Admission Requirements: No previous training in data processing or information science is required. Foreign students must have a reasonable command of English.

Tuition and Fees: $90 per course plus $10 registration fee and $25 laboratory fee.

Financial Aid: None listed.

CITY UNIVERSITY OF NEW YORK, QUEENS COLLEGE
LIBRARY SCIENCE DEPARTMENT

65-30 Kissena Boulevard
Flushing, New York 11367
(212) 445-7500, ext. 696

Director of Program: Dr. Morris A. Gelfand; Chairman and Professor; Ph.D. in Higher Education, New York, 1960.

Barbara V. Olson; Graduate Adviser and Associate Professor; M.L.S., Rutgers.

Description of Program: The present Master of Library Science program, which is accredited by the American Library Association, is designed to prepare professional librarians for schools, public libraries, higher academic institutions, and special libraries and information centers in a wide range of fields. Currently in a transitional stage, the curriculum is being modified by introduction on a trial basis of courses in or related to aspects of information science. At the same time, fundamental revisions are being studied with a view to incorporating into traditional, library-oriented courses relevant components of information science and systems analysis, and developing new, specialized courses in aspects of library automation. Departmental objectives will accordingly be reviewed, and it is likely that they will reflect the growing interest of the faculty in a library-oriented curriculum with emphasis on information science in the context of documentation and sound principles of management. Also under consideration are a sixth-year program of advanced studies and a doctoral program.

Employment Preparation: Administrators and support staff in libraries and information centers.

Degree:

M.L.S.: 12 courses (36 semester hours), including Introduction to Librarianship, Reference and Bibliography; Cataloging and Classification; and Research and Bibliographical Methods; plus a selection of advanced courses from several areas. Thesis not required.

Faculty:

Chicorel, (Miss) Marietta; Assistant Professor; M.A.L.S., Michigan, 1960.
Hyman, Richard; Assistant Professor; D.L.S., Columbia, 1971.
Logsdon, Richard H.; Professor; Ph.D. in Librarianship, Chicago, 1942.
McCurdy, Charles R.; Assistant Professor; M.A. in Fine Arts, Denver, 1950.
Preschel, (Mrs.) Barbara M.; Instructor; D.L.S. candidate, Columbia, 1971.
Slote, Stanley J.; Assistant Professor; Ph.D. in Librarianship, Rutgers, 1970.

Students Specializing in Information Science: No data given; approximately 300 master's candidates enrolled.

Information Science Courses: (credit in semester hours)

765 TC **Audio-Visual Resources in the Library** (3) F McCurdy
766 TA **Systems Analysis and Machine Applications in the Library** (3) F Preschel
773 **Advanced Cataloging and Classification** (3) Hyman
790.1 YD **Automated Data Banks** (3) F Preschel
790.2 HF **Computer Programming for the Library** (3) F
790.3 TB **Indexing** (3) F Chicorel
790 **Seminar in Information Retrieval** (3)

Topics to be covered include input, storage, search, and evaluation of information retrieval systems. This course is concerned with automation of the information storage, dissemination, and retrieval functions of libraries, and is closely related to proposed courses in indexing data bases and in programming. In the presence of the course in data bases, which would give plenty of examples of what to search, this course would emphasize how to search, and would also deal with design of new systems, incorporating either existing data bases or original data.

Institutes and Short Courses: None at present.

Research Opportunities for Students: None at present.

Computer Facilities: IBM 360/30; Sigma 7.

Admission Requirements:

M.L.S.: Bachelor's degree from an accredited college and an average of at least B; submission of the results of the G.R.E.; evidence of reading knowledge of a foreign language.

Foreign Students: All international students are required to take the T.O.E.F.L.

Tuition and Fees: $45 per semester hour, plus consolidated fee of $66.

Financial Aid: Limited funds for tuition aid and partial scholarships; application pending for E.P.D.A. fellowships.

STATE UNIVERSITY OF NEW YORK AT ALBANY
SCHOOL OF LIBRARY AND INFORMATION SCIENCE

1400 Washington Avenue
Albany, New York 12203
(518) 457-8575

Director of Program: Dr. John J. Farley; Dean (see faculty list below).

Description of Program: The instructional program provides a theoretically oriented curriculum based on the assumption of a rudimentary and still emerging discipline of information science; At present, three areas of concentration are open to students at the master's level: (1) Bibliography and Information Services, the viewpoint developed here being the largest possible, that of the entire world of knowledge and scholarship, as it is produced and described; (2) Classification, Indexing and Information Technology, concerned with the construction, analysis and use of schemes and apparatus for the subject control of information and the products of scholarship; (3) Social and Political Aspects of Librarianship, which treats the library and information center as an institution within the larger framework of organization theory, as an organism responding to a changing political and social environment, to an exploding and competitive communications environment, and to the leadership of informed professionals. While imbued with theory and providing only discipline-oriented concentrations at the doctoral level in the areas of Information Organization and Processing and Social and Political Aspects of Information Systems, the program nevertheless makes provision for concentration in applied aspects of the discipline at the master's level.

Employment Preparation: Librarians.

Degrees:

M.L.S.: 36 semester hours (9 may be taken in another field). Required courses: Libraries and Information Centers as Organizations; Information Processing; Introduction to Bibliography; The Reference Process; and Research Methods.

Ph.D.: (Beginning 1972) Minimum 66 semester hours; three academic years of full-time study and research, or the equivalent over a longer period beyond the baccalaureate; comprehensive exam at end of 36 hours of graduate work; a qualifying exam to be taken within the academic semester following the completion of 30 hours beyond the master's degree (or equivalent study); dissertation based on independent research; oral examination on the dissertation.

Faculty:

Aceto, Vincent J.; Professor; M.A., M.S.L.S., S.U.N.Y. at Albany, 1954, 1959.
Archer, H. Richard; Lecturer; M.A., California at Berkeley, 1943; Ph.D., Chicago, 1954.
Aronson, Ruth; Lecturer; M.S.L.S., S.U.N.Y. at Albany, 1966.
Burgess, Robert S.; Professor; B.S. in L.S., George Peabody, 1939; M.A., Chicago, 1942.
Cole, Dorothy Ethlyn; Associate Professor; A.M., Chicago, 1943.
Egan, Mary Joan; Lecturer; M.S., S.U.N.Y. at Albany, 1962.
Farley, John J.; Dean and Professor; M.A., M.S., Columbia, 1950, 1953; Ph.D., New York U., 1964.
Hoyle, Norman E.; Associate Professor; M.A., Ph.D., Duke, 1958, 1960; M.A., Chicago, 1966.
Katz, William A.; Professor; M.A., U. Washington, 1956; Ph.D., Chicago, 1965.
Klempner, Irving M.; Professor; M.S., D.L.S., Columbia, 1952, 1967.
Mitchell, David; Assistant Professor; M.L.S., S.U.N.Y. at Albany, 1962.
Morehead, Joseph H., Jr.; Assistant Professor; M.A., Columbia, 1955; M.S.L.S., Kentucky, 1964.
Orsini, Lillian K.; Assistant Professor; M.S.L.S., S.U.N.Y. at Albany, 1961.
Paulson, Peter J.; Lecturer; M.A., Columbia, 1951; M.L.S., S.U.N.Y. at Albany, 1954.
Piggford, Roland R.; Assistant Professor and Director of Admissions; M.L.S., Pittsburgh, 1964.
Smith, Susan S.; Professor; B.S.L.S., M.A., S.U.N.Y. at Albany, 1937, 1948; Ed.D., Columbia, 1956.
Stevenson, Gordon; Assistant Professor; M.A., Duquesne, 1950; M.A., Ph.D., Indiana, 1956.
Vaillancourt, Pauline M.; Associate Professor; M.S., D.L.S., Columbia, 1963, 1968.
Weinstein, Frederic D.; Professor; A.M., Chicago, 1951; D.L.S., Columbia, 1970.
Whalen, Lucille; Associate Dean and Professor; M.S.L.S., Catholic U., 1954; D.L.S., Columbia, 1965.

Students Specializing in Information Science: No data given; approximately 350 master's candidates enrolled.

Information Science Courses: (credit in semester hours)

Lib 602 Recorded Knowledge and Society (3) Weinstein
Concerned with symbol systems, public communication, and information storage in past and present cultures; roles of various media in the diffusion of knowledge, in social change, and in the formation of public opinion and popular taste; the place of libraries and information centers in the communication design.

Lib 603 Information Processing (3) Stevenson, Klempner
Analysis of the principles of descriptive bibliography, variant classification schemes, coding and notational systems, subject-heading lists and thesauri, manual and auto-indexing approaches, text abridgments and text substitute devices.

Lib 613 The Communications Process (3) Weinstein
Lib 615 Library and Information Networks (3) Burgess
Lib 633 Information Storage and Retrieval (3) Klempner
Lib 635 Theory of Classification (3) Klempner
Lib 636 Systems Analysis and Library Automation (3)

Institutes and Short Courses: Colloquium on Machine-Readable Bibliographic Data Bases, Their Creation and Use, April 20-21, 1971.

Research Opportunities for Students: The metropolitan Albany area is rich in number and variety of social agencies, governmental bodies, and related information centers affording unusual opportunities for investigating functions central to the generation, transfer, and diffusion of information. Cooperative programs with Union College, Rensselaer Polytechnic Institute, Skidmore College, etc., are in effect.

Computer Facilities: UNIVAC 1108; six 8C tape drives; two Fastrand drums; three 432 UNIVAC drums; 57 Model 33 remote terminals.

Admission Requirements:

M.L.S.: Bachelor's degree from an approved college; good academic record; at least 12 credit hours of a foreign language or passing of a reading exam; and the G.R.E.

Ph.D.: General requirements for admission to graduate study as given in Graduate Bulletin; potential to contribute to library and information science research and scholarship.

Foreign Students: Same as for U.S. students.

Tuition and Fees: $400 per semester for full-time students; $20 per unit for part-time students.

Financial Aid: A limited number of assistantships paying tuition plus $2800 per year, with 20 hours per week work in the library school; the M.L.S. can be completed in two years.

STATE UNIVERSITY OF NEW YORK AT BUFFALO
SCHOOL OF INFORMATION AND LIBRARY STUDIES

Buffalo, New York 14214
(716) 831-3835

Director of Program: George S. Bobinski; Dean and Professor; M.S.L.S., Case Western Reserve; M.A., Ph.D., Michigan; public and academic libraries, library history.

Description of Program: Library-oriented curriculum.

Employment Preparation: Specialist positions such as input, processing, and storage.

Degree:
M.L.S.: 36 credit hours of which 9 credit hours are required core courses. Thesis not required.

Faculty:

Bernier, Charles L.; Professor; M.Sc., Ph.D., Ohio State; information sciences, systems and services, abstracting and indexing.
Conaway, Charles W.; Assistant Professor; M.S., Florida State; Ph.D., Rutgers; reference sources and services, document surrogation, computer applications to libraries and information retrieval.
Giuliano, Vincent E.; Adjunct Professor; M.S., Michigan; Ph.D., Harvard; information systems and sciences, media and interpersonal communications.
O'Neill, Edward T.; Assistant Dean and Associate Professor; M.S.I.E., Ph.D., Purdue; operations research on library systems, library automation, research methods.
Reed, David F.; Assistant Professor; M.S.L.S., Wisconsin; library management and systems, library automation, academic and special libraries.

Students Specializing in Information Science: A portion of approximately 140 master's candidates enrolled in the School.

Information Science Courses: (credit in semester hours)

LI 510 Library Management and Systems (3) F,Su Reed
LI 514 Abstracting and Indexing (3) F Bernier
LI 531 Sight, Sound and Society (3) F
LI 543 Basic Media Creativity (3) Sp
LI 544 Media Methods and Equipment (3) F
LI 545 Television and Videotape Workshop
LI 560 Information Processing Technology (3) Sp O'Neill
LI 561 Information Storage, Retrieval and Selective Dissemination Systems (3) Sp Conaway
LI 562 Classification Systems (3) F Conaway
LI 564 Library Systems Analysis (3) Sp O'Neill
LI 566 Library Automation (3) F Reed
LI 582 Information Centers and Services (3) Sp Bernier
LI 591 Planning and Organization of Library Systems (3) F O'Neill

Institutes and Short Courses: None listed.

Research Opportunities for Students: Practical training and/or independent study and research possible for up to 6 credit hours.

Computer Facilities: CDC 6400; IBM 360/40; remote access terminals.

Admission Requirements:
M.L.S.: Undergraduate degree in almost any discipline with high grade point average; high scores on aptitude section of G.R.E.; three letters of reference.
Foreign Students: Same as above plus satisfactory score on T.O.E.F.L.

Tuition and Fees: $600 per semester.

Financial Aid: 6 graduate assistantships at approximately $2500 for 10 months plus tuition waiver.

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
DEPARTMENT OF COMPUTER SCIENCE

New West
Chapel Hill, North Carolina 27514
(919) 933-2148

Director of Program: Frederick P. Brooks, Jr.; Chairman (see faculty list below).

Description of Program: A combination of theoretical and computer science curricula.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research.

Degrees:
M.S. in Computer Science: Normally a 1½ to 2 year program including a core of required courses and the writing of a thesis.
Ph.D. in Computer Science: Two years of course work; a knowledge of one foreign language; passing a set of comprehensive examinations; and a dissertation.

Faculty:

Brooks, Frederick P.; Professor and Chairman; Ph.D., Harvard.
Calingaert, Peter; Professor; Ph.D., Harvard.
Dillon, Martin; Assistant Professor; Ph.D., S.U.N.Y. at Buffalo.
Elder, Howard A.; Assistant Professor and Supervisor of Systems Programming, Computation Center; Ph.D., Cornell.
Mago, Guyula A.; Assistant Professor; Ph.D., Cambridge; switching and automata theory, logical design.
Pizer, Stephen M.; Associate Professor; Ph.D., Harvard; picture processing on computers and relation to human picture perception.
Stanat, Donald F.; Assistant Professor; Ph.D., Michigan; theory of automata, formal languages, pattern recognition.
Weiss, Stephen F.; Assistant Professor; Ph.D., Cornell; information storage and retrieval, automatic analysis of natural language.

Students Specializing in Information Science: Approximately 70 master's and 15 doctoral candidates enrolled.

Information Science Courses: (credit in semester hours)

119 **Information Systems in Language Research** (3) F,Sp Dillon
120 **Data Representation and Manipulation** (3) F,Sp Foley, Weiss
128 **Introduction to General Linguistics: Grammar** (3) F Ruhl
135 **Data Processing and File Management** (4) Sp Danziger, Foley
138 **Stochastic Analysis of Information Systems** (3) F Wallace
140 **Programming Systems** (3) Sp Elder
145 **Software Engineering Laboratory** (2) Sp Brooks
171 **Natural Language Processing** (3) F Weiss
172 **Information Retrieval** (3) Sp Dillon
178 **Philosophy of Language** (3) F Ziff
219X **Introduction to Computer Use in Language Processing** (no graduate credit) F,Sp Staff
241 **Compiler Design** (3) F Elder
242 **Design of Control Programs** (3) F Brooks (not given 1971-72)
280 **Algorithms, Languages, and Automata** (3) F Mago
281 **Automata and Formal Languages** (3) Sp Mago (not given 1971-72)
288 **Information Theory** (3) Sp Chakravarti

Institutes and Short Courses: An extensive colloquium series complements the formal courses.

Research Opportunities for Students: Research grants and practical training.

Computer Facilities: The Triangle Universities Computation Center (TUCC) is equipped with an IBM 370/165 used by remote access. The University Computation Center operates a 360/75. The Department operates a computer-assisted instruction center equipped with 6 CC-30 graphic display terminals with light pens and random-access slide projectors. Other departmental facilities include an IDIIOM II graphic display system with a Varian 620/f computer, an Interdata Model 3 computer, several teletype and typewriter-based terminals, and a closed-circuit television system.

Admission Requirements: Entering students must have studied mathematics through calculus and must be able to program in some procedure-oriented language. A baccalaureate degree with at least a B average is required, not restricted to any specific major field. Courses in modern algebra and discrete mathematics, elementary linguistics, and preparation in a foreign language are recommended. The G.R.E. aptitude tests must be taken. Each applicant should submit a short statement of his objectives in pursuing graduate study and of his computer programming experience.

Tuition and Fees: Residents, $398; nonresidents, $1473.

Financial Aid: Teaching and research assistantships, $3400 for 9 months, half-time.

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
SCHOOL OF LIBRARY SCIENCE

Manning Hall
Chapel Hill, North Carolina 27514
(919) 933-8366 or 933-8367

Director of Program: Ray Carpenter; Acting Dean of the School of Library Science (until December 31, 1971) and Research Associate of the Institute for Research in Social Science; M.A., M.S.L.S., Ph.D. in Sociology, North Carolina, 1951, 1958, 1968. Edward G. Holley; Dean of the School of Library Science (effective January 1, 1972); M.A. in L.S., George Peabody, 1951; Ph.D. in L.S., Illinois, 1961.

Description of Program: Emphasis is on a library-oriented and systems-oriented curriculum. Courses dealing with information retrieval and natural language processing are cross-listed with the Department of Computer Science.

Employment Preparation: Library automation; design and management.

Degree:

M.S.L.S. with Specialization in Information Systems: Students are required to take L.S. 100, 110, 120, 130, 150, 201, and 231 or 232 or 241; to demonstrate a reading knowledge of one modern foreign language; to complete 2 semesters of residence; and to complete a satisfactory comprehensive examination in the field of library science as well as an extended research paper. No thesis is required.

Faculty:

Bird, Warren; Visiting Assistant Professor of Library Science; M.S., Columbia, 1964.
DesJardins, Robert B.; Associate Professor of Business Administration and Director of the Doctoral Program in Business Administration; M.S., Florida State, 1954, Ph.D., North Carolina, 1965.

Dillon, Martin; Assistant Professor of Library Science and of Computer Science; Ph.D. in English, S.U.N.Y. at Buffalo, 1967.
London, Gertrude; Associate Professor of Library Science; Diplôme de professeur de francais à l'étranger, 1934, Docteur de l'Université de Paris, 1935; Academic Postgraduate Diploma in Librarianship, 1959.
Roper, Fred; Assistant Professor of Library Science; M.S.L.S., North Carolina, 1962; Ph.D., Indiana, 1971.
Shearer, Kenneth; Assistant Professor of Library Science; M.S.L.S., Ph.D., Rutgers, 1963, 1969.
Weiss, Stephen; Assistant Professor in Computer Science; M.S., Ph.D., Cornell, 1969, 1970.

Students Specializing in Information Science: No data given; approximately 165 students enrolled in the School.

Information Science Courses: (credit in semester hours)

L.S. 100 The Library in Society (3) F,Sp

Concepts and methods for assessing the adequacy of libraries and information systems in serving their present and prospective publics with attention to librarianship as a profession and an introduction to computers and programming.

B.A. 192 Introduction to Management Information Systems (3) Sp

L.S. 103 Information Systems in Language Research (3) F,Sp

L.S. 115 Natural Language Analyzers (3) Sp

Physiological, psychological, syntactic and semantic models of natural language; emphasis upon implementation on the computer and related hardware of syntactic and semantic formalizations.

C.S. 172 Information Retrieval (3) Sp

Study of information retrieval and question-answering techniques, including document classification, retrieval and evaluation techniques, handling of large data collections, and the use of feedback.

L.S. 232 Scientific Management of Libraries (3) Sp

L.S. 255 Automating Information Systems (3) F,Sp

Institutes and Short Courses: None listed.

Research Opportunities for Students: Limited.

Computer Facilities: Duke, N.C. State, and U.N.C. cooperate in the Triangle Universities Computation Center (TUCC), which is equipped with an IBM 370/165 System with drum and disk storage and remote access terminals. The U.N.C. Computation Center has an IBM 360/75. The Department of Computer Science operates a computer-assisted instruction center including six CC-30 graphic display terminals with light pens and random-access slide projectors, a private region of slow core at TUCC, an Interdata Model 3 computer, an IBM 2250 graphic display terminal with light pen, and several teletype and typewriter-based terminals with a closed-circuit television system. The School of Library Science has a terminal to the University's combined facilities.

Admission Requirements:

M.S.L.S.: The student must have a bachelor's degree from an accredited university or college, with at least 102 credit hours of liberal arts, with a B average or better; a minimum of 100 total percent on verbal and quantitative G.R.E.

Foreign Students: Same as for the other master's candidates. In addition, students must achieve a satisfactory grade on the T.O.E.F.L.

Tuition and Fees: Out-of-state students, $1387 per year; North Carolina students, $398 per year (excluding summer session).

Financial Aid: A few scholarships which cover tuition; several assistantships of $2500 per year; student loan funds; work-study plan possible after completion of first semester.

NORTHERN ILLINOIS UNIVERSITY
DEPARTMENT OF LIBRARY SCIENCE

DeKalb, Illinois 60115
(815) 753-1735

Director of Program: Dr. (Mrs.) La Vern Walther; Head of Department (see faculty list below).

Description of Program: The Department of Library Science is mainly a library-oriented fifth-year program leading to the M.A. degree. The aim is to provide well-rounded training for the various kinds of library work. The close alliance with information science is recognized. Bibliographic competence and service are stressed, together with an awareness of the economics of library and information science. While room for specialization in a fifth-year program is limited, the student interested in information science can get a start through such courses as Technical Processes, Special Problems, and the Seminar in Information Retrieval.

Employment Preparation: Library processing; library management; educational library positions; research to some extent.

Degree:

M.A. in Library Science: Total hours, 30, of which nine *may* be outside the department, with advisor's consent. A reading knowledge of one foreign language is required. Three of the four bibliography courses (Humanities, Sciences, Social Sciences, Advanced Reference & Bibliography) are required. The student is "strongly advised" to take Foundations of Librarianship. He takes Special Problems, under which he prepares a qualifying paper. The thesis is optional, but the qualifying paper is required of all students unless they elect to do a thesis or present an acceptable piece of research in lieu.

Faculty:

Broadus, Robert N.; Professor of Library Science; B.L.S., Chicago, 1947; Ph.D. in Speech, Southern California, 1952.
Walther, (Mrs.) La Vern A.; Head of Department and Professor of Library Science; A.B. in L.S., U. Washington, 1939; M.S. in L.S., Columbia, 1944; Ed.D. in Library Science, Indiana, 1957.

Students Specializing in Information Science: No data given; approximately 150 master's candidates enrolled in the School.

Information Science Courses: (credit in semester hours)
552 Seminar in Information Retrieval (2) F Broadus

Institutes and Short Courses: None listed.

Research Opportunities for Students: None listed.

Computer Facilities: The University has a well-equipped computer center in Altgeld Hall.

Admission Requirements:

M.A.: A bachelor's degree from a four-year accredited college or university; a grade point average of 2.5 (on base of 4.0) for the last two years; approval of the department, which expects an average of 3.0 for the prerequisite core courses and a combined G.R.E. score of better than 800.

Foreign Students: In addition to the above, a T.O.E.F.L. score of 580.

Tuition and Fees: In-state full-time students, $244 per semester; out-of-state full-time students, $604; in-state, part-time, $27 per semester hour; out-of-state, part-time, $80 per semester hour.

Financial Aid: A few scholarships and assistantships are available.

OHIO STATE UNIVERSITY
DEPARTMENT OF COMPUTER AND INFORMATION SCIENCE

Caldwell Laboratory
2024 Neil Avenue
Columbus, Ohio 43210
(614) 422-5973

Director of Program: Marshall C. Yovits, Chairman of Department of Computer and Information Science (see faculty list below).

Description of Program: The Department of Computer and Information Science is a separate academic unit in the College of Engineering, operating in part as an interdisciplinary program with the cooperation of many other departments and colleges throughout the University. Its program emphasizes education, research, and the professional practice and application of computer and information science.

The philosophy and orientation of this program can be obtained from the following definition of computer and information science. Computer and information science deals with the body of knowledge concerned with the quantitive relationships, concepts, theory, and methods common to the processing and utilization of information, and with the theory and operation of the systems which process information. The study of both natural and artificial languages as modes of communication and of natural and artificial systems which process information is fundamental to computer and information science. Common properties of information are induced logically by the study of specific systems and specific areas of science and technology which have a concern with the handling of information. Information is defined as data of value in decision-making.

Employment Preparation: Software development; system programming; numerical analysis; information systems design; computer systems design; management information systems; teaching and research in computer and information science.

Degrees:

M.S. in Computer and Information Science: 53-58 quarter hours, of which 29 are requirements. No language requirement, thesis optional. Each student specializes in one of four options: theoretical foundations, information systems, computer systems, or numerical analysis. A core program of 9 hours is required for all options. In addition, each student will be held responsible on a Comprehensive/Qualifying Examination for any four of the following courses (20 hours): Engineering Psychology, Numerical Analysis, Digital Computer Programming III, Digital Computer Organization, Introduction to Linguistics, or Modern Methods of Information Storage and Retrieval.

Ph.D. in Computer and Information Science: Minimum, 135 hours of graduate study. The first stage is complete with the master's degree and a superior score on the qualifying exam. The second stage is completed by 90 quarter hours of work, a dictionary reading knowledge of one modern foreign language, passing of the General Examination, and admission to candidacy. The third stage, after admission to candidacy, is devoted primarily to research and seminars, the preparation of the dissertation, and the (oral) Final Examination.

Faculty:

Biermann, Alan W.; Assistant Professor of Computer and Information Science; Ph.D., California at Berkeley, 1968; theory of computer systems, formal systems.

Buttelmann, William H.; Assistant Professor of Computer and Information Science; Ph.D., North Carolina, 1970; automata theory, computer architecture and programming languages.

Chandrasekaran, Balakrishnan; Associate Professor of Computer and Information Science; Ph.D., Pennsylvania, 1967; pattern recognition and artificial intelligence, learning automata theory, finite memory decision theory, and game theory.

DeLutis, Thomas G.; Assistant Professor of Computer and Information Science; Ph.D., Ohio State, 1969; design and evaluation of information systems, systems programming.

Ernst, Ronald L.; Associate Professor of Computer and Information Science and Associate Professor of Psychology; Ph.D., Wisconsin, 1961; human performance theory and engineering, complex information processing and systems evaluation.

Foulk, Clinton R.; Associate Professor of Computer and Information Science; Ph.D., Illinois, 1963; programming languages, systems programming with emphasis on algorithms for parallel compilation.

Lazorick, Gerald J.; Associate Professor of Computer and Information Science and Associate Professor of Library Administration; Director, Mechanized Information Center; Ph.D., S.U.N.Y. at Buffalo, 1971; information storage and retrieval, design and analysis of library systems.

Mathis, Robert F.; Assistant Professor of Computer and Information Science; Ph.D., Ohio State, 1969; programming languages, numerical analysis.

Pepinsky, Harold B.; Professor of Computer and Information Science and Professor of Psychology; Ph.D., Minnesota; clinical and sociocultural psychology.

Petrarca, Anthony E.; Associate Professor of Computer and Information Science; Ph.D., New Hampshire, 1959; automatic indexing, chemical structural information processing, automated search systems, other aspects of information storage and retrieval.

Randels, James B.; Associate Professor of Computer and Information Science and Assistant Director, Learning Resources Computer Center; Ph.D., Ohio State, 1965; computer operating systems and utilities, telecommunications applications, subroutine libraries, programming languages.

Reeker, Larry H.; Assistant Professor of Computer and Information Science and Assistant Professor of Linguistics; Ph.D., Carnegie-Mellon; infinite automata, formal language theory, foundations of linguistic theory, language acquisition by children.

Rush, James E.; Associate Professor of Computer and Information Science; Ph.D., Missouri, 1962; indexing theory, automated language processing, organization of information, and parallel processing.

Taylor, Celianna; Senior Research Associate and Associate Professor of Library Administration; B.S.L.S., Case Western Reserve; information dissemination systems, information centers, library systems and management.

White, Lee J.; Associate Professor of Computer and Information Science and Associate Professor of Electrical Engineering; Ph.D., Michigan, 1967; Mathematical programming, data structures, organization of information.

Wigington, Ronald L.; Adjunct Associate Professor of Computer and Information Science; Director of R&D, Chemical Abstracts Service; Ph.D., Kansas, 1964; computer system design.

Yovits, Marshall C.; Chairman of Department of Computer and Information Science; Professor of Computer and Information Science and Professor of Electrical Engineering; Director, CIS Research Center; Ph.D., Yale; information systems, theory of the flow of information, self-organizing systems.

Students Specializing in Information Science: Approximately 150 graduate students enrolled.

Information Science Courses: (credit in quarter hours)
620 Engineering Psychology (3) F,Sp
641 Digital Computer Programming III (5) F,W,Sp,Su
712 Man-Machine Interface (5) W
720 Introduction to Linguistic Analysis (5) W,Su
725 Basic Concepts of Self-Organizing Systems (3) Sp
726 Theory of Automata I (3) F
727 Theory of Automata II (3) W
728 Theory of Automata III (3) Sp
730 Basic Concepts in Artificial Intelligence (5) W
740 Computer Systems Programming (5) Sp
750 Modern Methods of Information Storage and Retrieval (5) F,Sp
751 Fundamentals of Document-Handling Information Systems (3) W
752 Analysis and Synthesis of Information Systems (3) Sp
753 Theory of Indexing (5) W
754 Language Processing for Information Storage and Retrieval (5) Sp
755 Programming Languages (5) W
756 Compiler Design and Implementation (5) F
760 Selected Topics in the Mathematics of Information Handling I (3) Su
761 Selected Topics in the Mathematics of Information Handling II (3) F
764 Digital Signal Processing (3) Sp
765 Theory of Management Information Systems (5) Sp
780 File Structures (3) Sp
788 Intermediate Studies in Computer and Information Science (1-5) F,W,Sp,Su
788.01 Theory of Information
788.02 Information Storage and Retrieval
788.03 Theory of Automata
788.04 Artificial Intelligence
788.05 Pattern Recognition
788.06 Computer Systems Programming: Basic Telecommunication and Access Methods
788.10 Man-Machine Interaction
788.12 Management Information Systems
788.14 Socio-Psychological Aspects of Information Processing
805 Information Theory in Physical Science (3-5) W
806 Information Theory and Models of Natural Complex Systems (3-5) Sp
816 Advanced Engineering Psychology (Special Section) (3) W
820 Computational Linguistics (3) Sp
835 Pattern Recognition (3) F
850 Theory of Information Retrieval I (5) W
851 Theory of Information Retrieval II (3) Sp
855 Formal Languages (5) W
865 Seminar on Socio-Psychological Aspects of the Information Sciences (3) W
888 Advanced Studies in Computer and Information Science (1-5) F,W,Sp,Su
888.01 Theory of Information
888.02 Information Storage and Retrieval
888.03 Theory of Automata
888.04 Artificial Intelligence
888.05 Pattern Recognition
888.06 Computer Systems Programming
888.07 Programming Languages
888.10 Man-Machine Interaction

888.11 Formal Languages
888.12 Management Information Systems
888.14 Socio-Psychological Aspects of Information Processing

Institutes and Short Courses: Computer and Information Science Lectures and Seminars Series.

A proposal has been submitted for an NSF Summer Institute in Computer and Information Science for Teachers in Mathematics, 1972; courses offered: Digital Computer Programming, Numerical Analysis, and Survey of Computer and Information Science.

Research Opportunities for Students: The research activities which are a central part of the program consist of a broad conceptual base supported in major part by a grant from the National Science Foundation, supplemented by a number of smaller and more practically oriented contracts and grants. The broad core research program and these other research tasks interact to form an integrated framework.

Computer Facilities: There are four computer centers at The Ohio State University. They are: Instruction and Research Computer Center; Administrative Systems Computer Center, Public Service Computer Center; and Learning Resources Computer Center. Included in these centers are an IBM 360/75, three IBM 360/50 machines, an IBM 360/40, and an IBM 7094, as well as several IBM 1130 machines, and a number of remote terminals. In addition, the Department has remote online terminals.

Admission Requirements:

M.S.: A baccalaureate or professional degree from an accredited college or university; at least a 2.7 grade point average (on a 4.0 base) for all previous academic work; evidence that the applicant is able to pursue graduate work; academic credit or equivalent experience for 2 courses in digital computer programming, to include an introduction to assembly language programming; mathematics through the calculus; and 10 additional quarter hours of mathematics or computer and information science. These requirements may, at the discretion of the Graduate Committee, be relaxed for otherwise exceptionally qualified students.

Ph.D.: Only students who have demonstrated outstanding scholastic ability in their beginning graduate work will be admitted.

Foreign Students: In addition to the above, the T.O.E.F.L. is required, unless the student is a citizen of England, Canada, or Australia, or has received a degree from a university within the U.S.

Tuition and Fees: State residents, full-time, $210 per quarter; nonresidents, full-time, $560 per quarter.

Financial Aid: A wide variety of fellowships, many awarded for 4 years (24 fellowships awarded for 1970-71); a number of teaching and research assistantships (53 awarded for 1970-71).

UNIVERSITY OF OKLAHOMA
GRADUATE PROGRAM IN INFORMATION AND COMPUTING SCIENCES

905 Asp Avenue, Room 152
Norman, Oklahoma 73069
(405) 325-3866

Director of Program: Ronald R. Mohler; Chairman (see faculty list below).

Description of Program: The University of Oklahoma offers an interdisciplinary doctoral program in computing sciences and systems studies related to computer applications. Present areas of research include modeling, simulation, artificial intelligence, physiological processes, urban systems, medical and legal information systems, approximation theory, and mathematical linguistics.

Employment Preparation: Systems analysis; software design; data processing; information systems; research and education.

Degrees:

M.S. in Information and Computing Sciences: 32 graduate semester hours required for nonthesis option; thesis program also available. Programs of study are designed on an individual basis. Each student will be expected to choose a strong minor field in addition to computer science, and his overall course of study will emphasize computer applications in that field. Comprehensive examinations and programming examinations must be passed.

Ph.D. in Information and Computing Sciences: 90 semester hours of courses beyond the bachelor's degree; comprehensive examinations; programming examinations; dissertation. Programs designed on an individual basis; computer applications to a selected minor field are emphasized.

Faculty:

Christensen, James H.; Assistant Professor, Information and Computing Sciences, and Chemical Engineering & Materials Science; Ph.D., Wisconsin; design and applications of real time computers, hardware and software, system analysis and optimization.

Devine, Michael D.; Assistant Professor, Information and Computing Sciences and Industrial Engineering; Ph.D., Texas; operations research.

Feyock, Stefan; Assistant Professor, Information and Computing Sciences; Ph.D., Wisconsin; artificial intelligence, systems programming.

Gylys, Vytas B.; Associate Professor, Information and Computing Sciences; Ph.D., Illinois; programming languages, information structures, computer system development.

Mohler, Ronald R.; Chairman, Information and Computing Sciences and Professor; Ph.D., Michigan; systems analysis, control theory, physiological studies.

Payne, James A.; Associate Professor, Information and Computing Sciences, and Aerospace and Mechanical Engineering; Ph.D., California; urban systems modeling, computer simulation.

Pound, Lelia D.; Associate Professor, Information and Computing Sciences, Ph.D., Oklahoma; automata theory, mathematical linguistics.

Sweeney, James A.; Director, O.U. Computing Center; Professor, Information and Computing Sciences and Industrial Engineering; Ph.D., M.I.T.; information systems design, medical information systems.

Yu, Dahsoong; Assistant Professor, Information and Computing Sciences, and Aerospace and Mechanical Engineering; Ph.D., Carnegie-Mellon; biocybernetics, distributed systems, nonlinear mathematics.

Students Specializing in Information Science: No data given.

Information Science Courses: (credit in semester hours)

- **ICS 5403 Programming Languages** (3)
- **ICS 5413 Data Structures** (3)
- **ICS 5453 Compiler Construction** (3)
- **ICS 5613 Theory of Automata** (3)
- **ICS 5703 Systems Simulation** (3)
- **ICS 5803 Information Organization and Retrieval** (3)
  The purpose of this course is to provide an introduction to natural language processing, particularly as it relates to the design and operation of automatic information systems.
- **ICS 6103 Systems Programming** (3)
- **ICS 6203 Structural Analysis of Computer Languages** (3)
- **ICS 6603 Formal Languages and Syntactic Analysis** (3)
- **ICS 6903 Large-Scale Information Processing Systems** (3)
- **ICS 6953 Artificial Intelligence and Heuristic Programming** (3)

Institutes and Short Courses: Multidisciplinary colloquia, featuring prominent speakers, are presented. Short courses and institutes are offered through the University's College of Continuing Education.

Research Opportunities for Students: Research projects on numerous topics are available. Outstanding students are encouraged to apply for research assistantships.

Computer Facilities: The OU Merrick Computing Center is equipped with an IBM 360/50 and an IBM 1130. The OU Medical Center in Oklahoma City has an IBM 360/40, an IBM 1401, and a PDP-8. The University also has two Burroughs computers and three CDC computers that are available for student use and experiment.

Admission Requirements: The program of study normally requires a mathematical background equivalent to that of a bachelor's degree in science or engineering. Interested students from other disciplines are encouraged to enter the program. These students are expected to develop the requisite mathematical background.

Tuition and Fees: Resident fee for regular semester, $14 per credit hour; nonresident fee for regular semester, $40 per credit hour.

Financial Aid: Various fellowships, assistantships, loans and other financial aids are available to well-qualified students.

UNIVERSITY OF OREGON
SCHOOL OF LIBRARIANSHIP

Eugene, Oregon 97403
(503) 686-3183

Director of Program: Perry D. Morrison; Dean and Professor; M.A. in History, Whittier, 1947; B.L.S., D.L.S., California at Berkeley, 1949, 1961.

Description of Program: A library-oriented curriculum with a required course in automation. Systems analysis and information transfer processes are emphasized in several courses—e.g., Automation, Bibliography and Reference, Cataloging, Library Administration, Literature of the Sciences, and The Special Library.

One of the principal objectives of the program is to provide leadership in the development of new and improved concepts and practices in librarianship. Another is service to library development in Oregon through research, consultation and work with professional organizations. Librarians are prepared for work in most types of libraries.

Employment Preparation: Library technical processes; reference; bibliographic analysis; archival processing, management of libraries and information centers of various sorts.

Degrees:

M.L.S.: 45 hours total Required courses: Cataloging I; Bibliography and Reference; The Library in Society; Selection and Acquisition of Materials; Cataloging II; Advanced Bibliography and Reference; Research in Librarianship; and Library Automation. Thesis not required.

Ph.D. with Minor in Librarianship: Degree requirements controlled by major department concerned.

Faculty:

Berk, Robert A.; Assistant Professor; M.S. in L.S., Florida State, 1964; Medical Librarianship Intern, Emory, 1965-66.
Feller, Caroline J.; M.L.S., Columbia, 1956; Ph.D. in Speech, Oregon, 1971.

Students Specializing in Information Science: No data given; approximately 90 master's candidates enrolled in the School.

Information Science Courses: (credit in quarter hours)

- **Lib 445 Library and Audiovisual Materials** (3) Sp Feller
  Evaluation and use of audiovisual resources and consideration of uses of all forms of nonprint communications media in library programs for all types of libraries.
- **Lib 507 Seminar: Information Transfer** (3) W Berk
- **Lib 572 Library Automation** (3) W,Sp Berk
  Flow of recorded information in library development and use, with emphasis on mechanical aids and systems of control. Data processing techniques from punched cards to computers, basics of systems analysis and evaluation as applied to library procedures.

Institutes and Short Courses: None currently.

Research Opportunities for Students: Limited opportunities for practicum work. From time to time research and internship opportunities are available on government grant projects—e.g., in school or college instructional materials centers, archival depositories, and federal records centers. These opportunities cannot be predicted very far in advance. A few research assistantships to work with faculty on projects are usually available.

Computer Facilities: IBM 360/50H; PDP 10/50.

Admission Requirements:
M.L.S.: Bachelor's degree from an accredited college or university; grade point average of at least 3.0; satisfactory score on the G.R.E. aptitude tests; three letters of reference; and a personal interview.
Ph.D.: Cooperative doctorates; admission requirements controlled by major department concerned.
Foreign Students: Satisfactory score on the T.O.E.F.L. (substituted for the G.R.E.). Other requirements same as for U.S. citizens.

Tuition and Fees: $226 per quarter, regardless of state of residence.

Financial Aid: One $1500 annual scholarship awarded by the Board of Trustees of the Eugene Public Library; two $500 scholarships awarded by the University Development Fund; several research assistantships.

UNIVERSITY OF PENNSYLVANIA
THE MOORE SCHOOL OF ELECTRICAL ENGINEERING
Graduate Group in Computer and Information Sciences (C.I.S.)
200 S. 33rd Street
Philadelphia, Pennsylvania 19104
(215) 594-8540

Director of Program: John W. Carr III; Chairman of C.I.S. Graduate Group and Professor of Electrical Engineering; M.S.E.E., Ph.D., M.I.T., 1949, 1951.
Harvey L. Garner, Director; M.S. in Physics, Denver, 1951; Ph.D. in Electrical Engineering, Michigan, 1958.

Description of Program: The C.I.S. program, leading to advanced degrees, is guided by the Graduate Group Committee in Computer and Information Sciences. It permits graduate students with background in the physical sciences, as well as graduates in other fields related to modern data processing, to obtain both the M.S.E. and the Ph.D. degrees with specialization in theory of automata, data-processing systems, programming, switching theory, numerical analysis for computers, and information retrieval. The curriculum stresses the logical equivalence of computer programming, information processing systems, and mathematical models, as well as the importance of system design. In the latter, emphasis is placed on the relative capabilities of equipment and computer programs. These concepts are broadly applied to such fields as mechanical languages, mechanisms and devices, automata theory, programming theory, numerical analysis, information retrieval, and switching systems.

Employment Preparation: Generation, input, processing, and storage; systems design; management; education and research positions.

Degrees:
M.S. in Computer and Information Sciences: 8 course units (24 credit hours). Prerequisites for completion: Mathematical Logic, Numerical Analysis, Modern Algebra, Introduction to Computers. Thesis required.
Ph.D. in Computer and Information Sciences: 20 course units (60 credit hours). Prerequisites as for M.S. plus dissertation, qualifying examination, language examination.

Faculty:
Carr, John W., III; Chairman, C.I.S. Graduate Group and Professor of Electrical Engineering; M.S.E.E., Ph.D., M.I.T., 1949, 1951.
Gorn, Saul; Professor of Electrical Engineering; Diplome d'etudes superieures in Mathematics, Bordeaux, 1932; Ph.D. in Mathematics, Columbia, 1942.
Gray, Harry J.; Professor of Electrical Engineering; M.S.E.E., Ph.D., Pennsylvania, 1947, 1953.
Jeffrey, Richard C.; Professor of Philosophy; M.A. in Philosophy, Chicago, 1952; Ph.D., Princeton, 1957.
Joshi, Aravind K.; Associate Professor in Electrical Engineering and in Linguistics; M.S., Ph.D., Pennsylvania, 1958, 1960.
Lefkovitz, David; Lecturer; M.S.E.E., Ph.D., Pennsylvania, 1960, 1964.
Prywes, Noah S.; Professor of Electrical Engineering; M.S.E.E., Carnegie, 1951; Ph.D. in Applied Physics, Harvard, 1954.
Rubinoff, Morris; Professor of Electrical Engineering; M.A. in Physics, Ph.D. in Physics, Toronto, 1942, 1946.
Yamada, Hisao M.; Associate Professor of Electrical Engineering; M.S.E.E., Ph.D., Pennsylvania, 1956, 1960.

Students Specializing in Information Science: Approximately 300 master's and 160 doctoral candidates enrolled.

Information Science Courses: (credit in semester hours)

CIS 531	**Seminar on Computing with Symbolic Expressions**
CIS 582	**Introduction to Artificial Intelligence**
CIS 683	**Learning Machines**
CIS-EE 523A	**Introduction to Digital Computers: Programming and Logic**
CIS-EE 531	**Computing with Symbolic Expressions**
CIS-EE 543	**Systems and Devices**
CIS-EE 580A	**An Introduction to Computer Graphics**
CIS-EE 590	**Algorithms and Data Structures**
CIS-EE 591	**Introduction to Artificial Intelligence**
CIS-EE 648	**Seminar on Computers and Communications**
CIS-EE 670	**Introduction to Systems Programming**
CIS-EE 671	**Special Topics in Systems Programming**

- EE-CIS 672 Microprogramming
- E.E. 615 Information Theory I
- E.E. 638 Information Theory II
- E.E. 640 Theory of Automata
- E.E. 679 Seminar in Linguistic Processing
- E.E. 674 Mechanical Languages
- E.E. 675 Programming Languages
- E.E. 673 Seminar in Information Retrieval

Linguistics:
- 501 General Survey of Linguistics
- 540 Linguistics and Mathematical Logic
- 550 Formal Linguistics
- 559 Linguistic Transformations
- 600 Seminar in the Methods of Structural Linguistics
- 601 Seminar in Linguistic Transformations
- 641 Sentential Logics
- 642 Mathematical Logic
- 643 Theory of Recursion

Philosophy:
- 524 Problems of Logic of Modern Method
- 624 Semantics
- 650 Theory of Knowledge

Psychology:
- 721 Learning Theories
- 731 Perception
- 735 Human Information Processing
- 750 Mathematical Learning Theories
- 751 Measurement and Psychological Theories
- 759 Special Topics in Mathematical Psychology
- 760 Neural Basis of Behavior

Institutes and Short Courses: None listed.

Research Opportunities for Students: About 50 research and teaching fellowships available.

Computer Facilities: IBM 360/75; RCA Spectra 70/46; DEC-338; PDP-8; IBM 360/65; PDP-6.

Admission Requirements:

M.S.: Standard undergraduate science or engineering mathematics; must submit admission papers with certified transcripts for bachelor's degree and letters of recommendation. These are screened by an admissions committee.

Ph.D.: Standard undergraduate science or engineering mathematics; must submit applications with certified transcripts for bachelor's and master's degree work. These are screened for admission.

Foreign Students: High level of attainment. For admission, foreign students must be first class A students in all courses taken for degrees. This is decided when applicants are screened by the C.I.S. Committee.

Tuition and Fees: $315 per course unit plus general fee.

Financial Aid: Fellowship available; teaching and research assistantships available.

PENNSYLVANIA STATE UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE

426 McAllister Building
University Park, Pennsylvania 16802
(814) 865-9505

Director of Program: Dr. Preston C. Hammer (see faculty list below).

Description of Program: The curriculum of the Computer Science Program has been specifically designed for a multiplicity of needs–preparation for the knowledgeable application of computers in business and industry, preparation for scientific research in computer science and other fields, and the training and education of prospective school, college, and university teachers. Supported by a faculty with a broad range of research areas, the department offers both practical and theoretical courses concerned with many aspects of the use of computers, and the nature of computers and computation.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research.

Degrees:

M.S. in Computer Science: 30 credits total, including Structure of Artificial Languages, Systems Programming, and Information Processing Systems. Thesis optional.

Ph.D. in Computer Science: No required number of credits, but most students take about 60 credits plus thesis. Courses include those for master's program plus Graph Theory, Nonnumeric Programming, and 6 credits in the mathematical aspects of computer science.

Faculty:

Barnes, Bruce H.; Associate Professor; Ph.D. in Mathematics, Michigan State, 1960; automata theory, graph theory, numerical analysis.

Campbell, Graham M.; Assistant Professor; Computer Science Coordinator for Commonwealth Campuses; Ph.D., Pennsylvania State; computer systems.

Coffman, Edward G.; Associate Professor; Ph.D., U.C.L.A.; modeling and analysis, scheduling and queuing theory, data structures.

deMaine, Paul A.D.; Professor; Ph.D., British Columbia.

Forney, Charles; Assistant Professor, jointly with Computation Center; M.S., Pennsylvania State; computer systems.

Gotterer, Malcolm H.; Professor; D.B.A., Harvard.

Hammer, Preston C.; Chairman and Professor; Ph.D., Ohio State.

Johnson, Gerald; Associate Professor, jointly with Materials Research; Ph.D., Pennsylvania State; information retrieval.

Jones, Neil D.; Associate Professor; Ph.D., Western Ontario; formal languages and automata, compilers, computer languages.

Laird, Donald T.; Associate Professor; Director of the Computation Center; Ph.D. Pennsylvania State; computer systems.

Smith, Chester M.; Assistant Professor, jointly with Computation Center; Ph.D., Pennsylvania State; computer languages and systems.

Squires, Burton; Assistant Professor, jointly with computation center; Ph.D., Pennsylvania State; computer languages, pattern recognition, artificial intelligence.

Williams, C.M.; Assistant Professor; Ph.D., Texas; computer languages and systems, pattern recognition, computer graphics.

Students Specializing in Information Science: Nearly 100 master's candidates and 50 doctoral candidates enrolled.

Information Science Courses: (credit in semester hours)

404 Information Structures (3)
410 Introduction to Computer Systems (3)
411 Systems Organization and Programming (3)
420 Structure of Programming Languages (3)
450 Information Theory and Error-Correcting Codes (3)
470 Introduction to Computer Graphics (3)
500 Theory of Automata (3)
501 Algebraic Theory of Automata (3)
510 Structure of Artificial Languages (3)
511 Systems Programming (3)
530 Non-Arithmetic Programming (3)
535 Theory of Graphs and Networks (3)
540 Information Processing Systems (3)
545 Information Retrieval (3)
568-569 Theory of Formal Languages and Automata (3,3)
593 Special Topics in Languages and Systems (2-6)

Institutes and Short Courses: None listed.

Research Opportunities for Students: Aside from research within the department there are some research opportunities in other organizations on campus, especially the Computation Center, Material Research Labs, and the Ordinance Research Labs.

Computer Facilities: IBM System 360/65 plus several small machines.

Admission Requirements:

M.S.: Numerical Analysis (CS 453 or 454); Computer Languages and Systems (CS 404, 411, and 420); Mathematical Machine Theory (CS 468); Matrix Algebra (an approved course, such as Math. 63 or 441).

Ph.D.: Same as for master's program.

Foreign Students: No special requirements.

Tuition and Fees: State residents, $260 per semester; out-of-state students, $600 per semester; $32 per credit for in-state and $75 per credit for out-of-state students.

Financial Aid: Fellowships and traineeships from the National Science Foundation, the National Defense Education Act, and Penn State Graduate Fellowships; teaching assistantships in the Computer Science Department; research assistantships from grants to individual faculty members in Computer Science, the Computation Center, Ordinance Research Laboratory, Computer Aided Instruction, and other departments.

UNIVERSITY OF PITTSBURGH
DEPARTMENT OF COMPUTER SCIENCE

800 Cathedral of Learning
Fifth and Bigelow
Pittsburgh, Pennsylvania 15213
(412) 621-3500, ext. 7185

Director of Program: Dr. Orrin E. Taulbee; Chairman (see faculty list below).

Description of Program: The Department offers programs of graduate study to promote research in computing and to help meet the need for more specialists trained in the structure of computers, their languages, and techniques for their application. The graduate courses in computer science cover the fundamental aspects of the discipline as well as selected areas of application.

Employment Preparation: Systems analysis; software design; operations management programming; general computing management; teaching and research.

Degrees:

M.S. in Computer Science: Eight or more graduate courses with an average of B or better. At least 6 of the courses must be numbered 200 or higher, chosen as follows: CS 201; CS 211 or 216 or 218 or 226; CS 151 or 251; CS 221 or 222; and two or more 200-level CS courses. A written thesis and a final oral examination are required.

Ph.D. in Computer Science: The program consists of a course requirement block, an individually tailored block of advanced courses, and a research block. The course requirement block consists of at least 12 courses selected as follows: at least three among CS 211, 214, 216, 218, and 226; at least 3 among CS 151, 221, 251, 253, 222, 228, and 258; and at least 3 other 200-level courses (these may be offered by other departments). The student must average B or better in his computer science courses. A preliminary examination, a comprehensive examination, at least two successive terms in full-time graduate study, a dissertation, and an oral defense of the dissertation are required.

Faculty:

Berztiss, Alfs T.; Assistant Professor of Computer Science; Ph.D., Melbourne.
Borkowski, Casimir; Associate Professor of Computer Science and Library Science; Ph.D., Pennsylvania.
Burkhardt, Walter H.; Associate Professor of Computer Science; Dr. rer. nat., Stuttgart.
Conner, William M.; Assistant Professor of Computer Science; Ph.D., Michigan State.
Cooley, William W.; Professor of Education and Computer Science; Ed.D., Harvard.
Cupper, Robert D.; Assistant Instructor of Computer Science; B.S., Juniata Coll.
Davis, Ruth M.; Visiting Professor of Computer Science; Ph.D., Maryland.
Dwyer, Thomas A.; Associate Professor of Computer Science; Ph.D., Case Western Reserve.
Hunting, Eugene; Assistant Professor of Computer Science; Ph.D., M.I.T.
Kraynek, William T.; Assistant Professor of Computer Science; Ph.D., Carnegie-Mellon.
Lindstrom, Gary E.; Assistant Professor of Computer Science; Ph.D., Carnegie-Mellon.
Pople, Harry E.; Assistant Professor of Business Administration and Computer Science; Ph.D., Carnegie-Mellon.
Stafford, Robert L.; Assistant Professor of Computer Science; Ph.D., Yale.
Sullivan, Francis E.; Assistant Professor of Computer Science and Mathematics; Ph.D., Pittsburgh.
Taulbee, Orrin E.; Professor of Computer Science, Mathematics, and Library and Information Science; Chairman, Department of Computer Science; Ph.D., Michigan State.
Treu, Siegfried; Assistant Professor of Computer Science (on leave); Ph.D., Pittsburgh.
Walljasper, Stanley J.; Assistant Professor of Computer Science; Ph.D., Iowa.

Students Specializing in Information Science: Approximately 60 master's and 10 doctoral candidates enrolled.

Information Science Courses: (credit in semester hours)

CS 123 List Processing Languages (3)
CS 151 Computer Operating Systems (3)
CS 154 Programming Languages (3)
CS 156 Seminar: Micro-Programming and Emulation (3)
CS 214 Information Theory (3)
CS 216 Automata Theory (3)
CS 218 Seminar: Automata and Formal Languages (3)
CS 221 Algorithmic Languages (3)
CS 222 Structure of Assemblers, Interpreters and Compilers (3)
CS 226 Introduction to the Formal Study of Languages (3)
CS 227 Computational Linguistics (3)
CS 228 Seminar: Programming Languages (3)
CS 251 Advanced Computer Operating Systems (3)
CS 253 Computer Systems for Real-time Control (3)
CS 255 File Management (3)
CS 258 Seminar: Advanced Systems Design (3)
CS 271 Pattern Recognition (3)
CS 277 Artificial Intelligence (3)
CS 281 Information Handling Systems (3)
CS 283 Automatic Text Processing (3)
CS 284 Syntax and Semantics of Information Retrieval (3)
CS 292 Computer Networks for Man-Machine Interaction (3)
CS 294 Computer Assisted Instruction (3)
CS 296 Seminar: Computer Augmented Learning (3)

Institutes and Short Courses: None listed.

Research Opportunities for Students: Government research contracts.

Computer Facilities: 360/JD T.S.; 360/50 O.S.; PDP-10; PDP-X.

Admission Requirements: Bachelor's degree with a B average; computer science courses through assembly language programming and information structures; completion of mathematical statistics, calculus, and linear algebra.

Tuition and Fees: In-state students, approximately $1000 per term; out-of-state students, approximately $5000 per term.

Financial Aid: Scholarships, fellowships, teaching and research assistantships.

UNIVERSITY OF PITTSBURGH
INTERDISCIPLINARY DOCTORAL PROGRAM IN INFORMATION SCIENCE

Room 310, LIS Building
135 North Bellefield Street
Pittsburgh, Pennsylvania 15213
(412) 621-3500, ext. 6352

Director of Program: Professor Allen Kent, Chairman; Dr. Anthony Debons, Vice-Chairman (see faculty list below).

Description of Program: The basic tenet of the program is that there is a requirement for the study of the phenomena of information as a science. Such a science should develop by the careful identification of related theories, laws, and concepts; and from such theories, laws, and concepts, generate and conduct experiments which explicate the phenomena of information. As such, the educational objective of the program is the training of individuals in scholarly attributes which can contribute to the development of such a science.

Despite the obvious importance of the role of man in the information process, most academic programs in this area have predominantly stressed the technological or engineering component of the process. There is a need, therefore, for a training program which balances the human aspects of the information phenomena with the technological. The theories, principles, and laws governing human function need to be studied along with the details of the technology directly related to man's use of information. Consequently, individuals with broad backgrounds are needed to assemble, relate, and integrate areas of knowledge and to test their relevance to information phenomena both in practical and theoretical contexts.

The ability to work in interdisciplinary teams as well as independently; the ability to understand the manner of thinking and approach to technical and scientific problems characteristic of the various fields and disciplines; the ability to know the state of the relevant technology and how it can be applied to human information problems and to know man's limitations in application and use of technology is at the core of the academic program for Interdisciplinary Doctoral Studies in Information Science at the University of Pittsburgh.

Employment Preparation: Information technologists; information system specialists; information scientists (informatalogists).

Degree:

Ph.D. in Information Science: Total 36 credit hours beyond the master's level; information science graduate seminars, 9 hours; core area courses (basic science, behavioral science, informatics, computer science, systems theory, information technology), 12-21 hours; specialized courses, 9-12 hours; courses related to dissertation, 6 hours.

Faculty:

Belzer, Jack; Professor of Library and Information Science and Department of Industrial Engineering; Associate Director, Knowledge Availability Systems Center; B.S. in Electrical Engineering, Cooper Union, 1932.

Borkowski, Casimir; Associate Professor of Library and Information Science and Department of Computer Science; Research Associate, Knowledge Availability Systems Center; Ph.D. in Linguistics, Pennsylvania, 1958.

Caruso, Elaine; Assistant Professor, Interdisciplinary Doctoral Program in Information Science; Ph.D. in Library Science, Pittsburgh, 1969.

Debons, Anthony; Vice Chairman, Interdisciplinary Doctoral Program in Information Science; Professor of Information Science, Ph.D. in Experimental Psychology, Columbia, 1954.

Dym, Eleanor D.; Assistant Instructor, Interdisciplinary Doctoral Program in Information Science; Assistant Director, Knowledge Availability Systems Center; M.L.S., Pittsburgh, 1965.

Immroth, John Phillip; Associate Professor of Library and Information Science; Coordinator of Library Research Projects, Office of Communications Projects; Ph.D. in Library and Information Science, Pittsburgh, 1970.

Kent, Allen; Chairman, Interdisciplinary Doctoral Program in Information Science; Director, Office of Communications Programs; Director, Knowledge Availability Systems Center; Professor of Library and Information Science, Education, and Computer Science; B.S. in Chemistry, C.C.N.Y., 1942.

Mitroff, Ian; Associate Professor of Library and Information Science and Business Administration; Research Associate at the Philosophy of Science Center; Ph.D. in Engineering Science and Psychology, California at Berkeley, 1967.

Montgomery, K. Leon; Lecturer, Interdisciplinary Doctoral Program in Information Science; Ph.D. Candidate in Information Science, Pittsburgh.

Shirey, Donald L.; Assistant Instructor, Interdisciplinary Doctoral Program in Information Science; Senior Research Assistant, Knowledge Availability Systems Center; Ph.D. in Educational Research, Pittsburgh, 1970.

Williams, James; Assistant Instructor, Interdisciplinary Doctoral Program in Information Science; Research Assistant, Knowledge Availability Systems Center; Ph.D. Candidate in Information Science, Pittsburgh.

Students Specializing in Information Science: 34 doctoral candidates.

Information Science Courses:

IS 200 Foundations of Informatology I

An overview is presented of the basic concepts from which a science of information may be developed. Areas studied include data acquisition, transmission, processing, and data presentation.

IS 201 Foundations of Informatology II

Continuation of Foundations of Informatology I. Areas studied include data and information utilization. Principles underlying information transfer (communications) are introduced and discussed. Particular stress is placed on human cognitive theory in the development of a science of information.

IS 202 Mathematics in Information Science
IS 203 Statistics in Information Science I
IS 204 Statistics in Information Science II
IS 205 Sociology of Information Science
IS 206 Philosophy of Information Science

IS 207 Computers and Research Design

IS 208 Theories of Classification and Indexing

IS 209 Communication Theory

IS 210 Linguistics and the Library and Information Sciences

IS 211 Languages for the Library and Information Sciences

Introduction to the major languages of the world. Designed to show students how to use dictionaries and other tools to acquire a minimum of knowledge sufficient for acquisitions work and descriptive cataloging, plus specialized study in one of the following languages of the student's choice: French, Spanish, Russian, German, or Italian.

IS 212 Cybernetics and Information Science

IS 213 Syntax and Semantics of Information Retrieval

IS 224 Independent Study

Allows individuals interested in the basic science area of information science to read intensively on the subject with the general guidance of an advisor.

IS 225 Foundations of Behavioral Theory I

Provides the student with an understanding of the principles, theories, and methods used in the study of human behavior. Intended for students whose undergraduate major was in the physical or engineering sciences.

IS 226 Foundations of Behavioral Theory II

Continuation of Foundations of Behavioral Theory I.

IS 227 Human Information Processing

IS 228 Human Communication

IS 229 Computer Applications of Behavioral Science

IS 230 Human Factors in Systems

IS 249 Independent Study

Allows individuals interested in the behavioral science area of information science to read intensively on the subject with the guidance of an advisor.

IS 250 Computers and Logic in Information Retrieval

IS 251 Data Processing and the Library

The basic elements of a computer system are covered. Flowcharting and the FORTRAN programming language are learned. The elements necessary for library automation are discussed in the context of designing a portion of an automated library system.

IS 252 Advanced Data Processing and the Library

This course is an extension of IS 251 and covers the following areas: data management, vocabulary control techniques, search and retrieval techniques, and systems design. Students are introduced to the fundamental elements of assembly and COBOL languages.

IS 253 Artificial Intelligence

IS 254 Pattern Recognition (CS 271)

IS 255 Information Structures (CS 153)

IS 256 Information Handling Systems (CS 281)

IS 257 Computer-Assisted Instruction

IS 258 Interactive Systems

IS 259 Man-Machine Communication

IS 274 Independent Study

Allows individuals interested in the computer science area of information science to read intensively on the subject with the general guidance of an advisor.

IS 275 Mechanized Information Retrieval

IS 276 Information Presentation

IS 277 Informatics I

This course deals with the engineering principles underlying the design and development of information systems. Elementary physics for electronics, light, and sound are reviewed. Equipment useful in implementing information systems is studied. Included are computer input devices: keypunch, key-to-tape, key-to-disk; computers: mini, midi, and large scale; and computer output devices: printers, mechanical plotters, computer output microfilm, and microfilm equipment. Developing technologies which may have an impact on future information systems are discussed.

IS 278 Informatics II

Continuation of Informatics I.

IS 279 Systems Management (IE 225)

IS 280 Systems Reliability and Maintainability Engineering (IE 275)

IS 281 Specialized Information Centers

IS 282 Community Analysis and Development

IS 283 Operations Research (IE 182)

IS 295 Independent Study

Allows individuals interested in the technology area of information science to read intensively on the subject with the general guidance of an advisor.

IS 296 Colloquium

IS 297 Practicum

IS 298 Independent Study

Allows individuals interested in the technology area of information science to read intensively on the subject with the general guidance of an advisor.

IS 299 Thesis

IS 300 Research Seminar

Students will participate in research activities in the basic science area of information science.

IS 324 Independent Study in the Basic Science Area

IS 325 Research Seminar

Students will participate in research activities in the behavioral science area of information science.

IS 349 Independent Study in the Behavioral Science Area

IS 350 Research Seminar

Students will participate in research activities in the computer science area of information science.

IS 374 Independent Study in the Computer Science Area

IS 375 Research Seminar

Students will participate in research activities in the systems and technology area of information science.

IS 395 Independent Study in the Technology Area

IS 396 Colloquium

IS 397 Practicum

IS 398 Independent Study

Allows individuals interested in specific areas of information science to read intensively on the subject with the general guidance of an advisor.

IS 399 Dissertation

Institutes and Short Courses: Guest Speakers are invited during the year to present colloquia on various subjects. Students are required to attend over their academic career and prepare written reports for 28 colloquia. The colloquia are intended to be integrative experiences and the resultant reports are reviewed from time to time.

Research Opportunities for Students: A campus-based information system (funded by the National Science Foundation); Regeneration of Information (funded by the Office of Naval Research); Dialectic Inquiry Systems, Time Dependence of Relevance Judgments, and Manpower Requirements for Information Science (all funded by the University).

Computer Facilities: IBM 360/50 I, with associated peripheral equipment, disk drives, and tape control units.

Admission Requirements:

Ph.D.: Completion of 9 hours of graduate work in related courses; cumulative point average of 3.5 or higher (on a 4.0 scale); acceptable G.R.E. scores.

Foreign Students: Requirements as above, plus proficiency in the English language.

Tuition and Fees: Out-of-state graduate students, $980 per term; full-time Pennsylvania residents, $485 per term, or $44 per credit hour.

Financial Aid: Graduate student assistantships, $300 per month plus tuition remission; Graduate teaching fellowships, $350 per month plus tuition remission up to 9 credits per term.

PRATT INSTITUTE
GRADUATE SCHOOL OF LIBRARY AND INFORMATION SCIENCE

215 Ryerson Street
Brooklyn, New York 11205
(212) 622-2200, ext. 282, 283

Director of Program: Dr. Nasser Sharify; Dean (see faculty list below).

Description of Program: In addition to educating men and women for leadership in the traditional areas of librarianship, the School offers both required and elective courses designed to prepare students for a broadened range of opportunity in information, documentation, and communications centers, as well as in academic, school, public, and special libraries.

Building on the experience of three years in an expanded program in information science, the School is moving toward a form of degree which will expressly recognize information science as a specialty. Strong concentration and expansion of the information science curriculum at the master's level, with a major specialization in information science, is in progress. In addition, the Continuing Education Division will offer two evening courses in information science for the first time in the fall of 1971, with plans underway to add two additional courses in the spring of 1972. The program and curriculum in information science might be classified as primarily a systems-oriented curriculum, with secondary emphasis on library orientation.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management positions.

Degree:

M.L.S.: 36 semester hours with an average grade of B, including the following 4 required courses (3 credits each): Organization of Library Materials; Basic Information Sources; Introduction to Librarianship; and Introduction to Information Science. One of the following reference courses must also be taken: Government Publications of the United States; Information Resources of the Humanities; Information Resources of the Social Sciences; or Information Resources of Science and Technology. No thesis is required.

Faculty:

Brenner, Everett H.; Lecturer; Manager, Central Abstracting and Indexing Service, American Petroleum Institute; M.A., Michigan.
Buchanan, Oliver H.; Professor; M.S. in Biological Chemistry, Ph.D. in Biological Chemistry, Michigan, 1939, 1945.
Frank, Nathalie; Assistant Professor; B.S. in Library Science, Columbia.
Matta, Seoud M.; Lecturer; Director of Technical Services, New York University Libraries; B.A. in L.S., Cairo; M.S.L.S., D.L.S., Columbia.
Preschel, Barbara M.; Lecturer; D.L.S. Candidate, Columbia.
Sharify, Nasser; Dean and Professor; Licencie ès Lettres, Teheran; M.S., D.L.S., Columbia.
Tagler, John; Lecturer; M.L.S., Pratt Inst., 1971.

Students Specializing in Information Science: No data given; approximately 250 master's candidates enrolled in the School.

Information Science Courses: (credit in semester hours)

COURSES OFFERED IN REGULAR M.L.S. DEGREE PROGRAM

LS 511 Introduction to Information Science (3) Buchanan

An introduction survey of information science as a field of study; the role of major information and documentation centers. Overview of approaches and techniques developed to meet the information demands of modern technological societies. Covers associations, career development, and literature in the field.

LS 512 Abstracting and Indexing (3) Frank

LS 514 Information Storage and Retrieval Systems (3) Buchanan

Organization of documents by conventional and nonconventional indexing techniques; study of the problems involved in the design of information systems.

LS 515 Automated Library Operations (3) Matta

LS 516 The Place of Language in Communication (3) Brenner

LS 517 Specialized Information Centers (3) Buchanan

CONTINUING EDUCATION PROGRAM

Introduction to Information Science (for College Graduates) (3) F

Automation in Libraries (3) Sp Matta

Institutes and Short Courses:

For the past three years, the Pratt Graduate School of Library and Information Science has been a cosponsor of the 6th, 7th, and 8th Annual National Information Retrieval Colloquia, held in Philadelphia each spring.

In February 1971, Pratt G.S.L.I.S. served as host to a Symposium on **Indexing in Perspective** cosponsored by the National Federation of Science Abstracting and Indexing Services and The American Library Association Resources and Technical Services Division.

On February 3-4, 1972, Pratt G.S.L.I.S. and N.F.S.A.I.S. will cosponsor a symposium on **Utilization of Computer Based Services** to be held at the Pratt Manhattan Center, 46 Park Avenue, New York City.

Research Opportunities for Students: There is no supervised cooperative program, but many part-time students are working full- or part-time in libraries and information centers throughout the New York metropolitan area.

Computer Facilities: IBM 1620; IBM 1130; Philco 2000; PDP-8 (all on Pratt campus); plus Dartmouth Time Sharing System.

Admission Requirements:

M.L.S.: An applicant for admission must hold a baccalaureate degree from an accredited college or university representing sound, basic training in the humanities, social sciences, or sciences. He must have a superior scholastic record and possess a reading knowledge of at least one modern foreign language. He must also give evidence of maturity and professional promise.

Foreign Students: Applicants from other countries should possess the equivalent of the academic and personal qualifications for admission required of students from the United States.

Tuition and Fees: $80 per credit for first 6 credit hours, plus $70 per credit for each additional credit.

Financial Aid: Full-tuition fellowships; scholarships of $350 to $3000; Scholar Incentive Awards of $100-$400 per semester; loans of up to $2500 per year; work-study programs.

ROSARY COLLEGE
GRADUATE SCHOOL OF LIBRARY SCIENCE

7900 West Division Street
River Forest, Illinois 60305
(312) 369-6320

Director of Program: Sr. M. Lauretta McCusker, O.P.; Dean (see faculty list below).

Description of Program: The Graduate School aims to equip men and women for a professional career in librarianship. The curriculum provides the knowledge and skills basic to any library position, and for more than twenty-five years its primary objective has been the training of professional librarians for all types of libraries.

Employment Preparation: Librarians.

Degree:

M.A. in Library Science: Completion of 36 hours of graduate course work, including the basic required courses; attainment of an average of B in course work; no thesis required.

Faculty:

Allen, Kenneth; Lecturer (visiting); M.S. in Ed. Southern Illinois, 1964; Ed.D., Northern Illinois, 1970.
Davis, Richard A.; Assistant Professor; M.A. in L.S., Chicago, 1959.
DuCote, Richard; Visiting Faculty; M.S., Louisiana, 1953.
Griffin, Hillis; Lecturer (visiting); M.L.A. Washington, 1958.
Haas, Katherine L.; Instructor; M.A. in L.S., Rosary Coll, 1968; M.L.A., Tennessee Medical Units, 1969.
McCusker, Sister Lauretta; Dean and Professor; M.S., D.L.S., Columbia, 1950, 1963.
Powers, Sister Mary Luella; Professor; B.A. in L.S., M.A. in L.S., Michigan, 1931, 1934; Ph.D., Chicago, 1945.

Students Specializing in Information Science: No data given; nearly 400 master's candidates enrolled in the School.

Information Science Courses: (credit in semester hours)
- **527 Audio-Visual Services in Libraries** (3) F,Sp,Su Allen, DuCote
- **536 Automation in the Library** (3) F,S Griffin
  An introductory analysis of punch-card and computer based applications to library procedures for all types of libraries.
- **540 Indexing and Abstracting** (3) Sp Davis

Institutes and Short Courses: Will have two institutes for school librarians during the 1971-72 school year.

Research Opportunities for Students: None this year.

Computer Facilities: Data processing equipment available. Computer available at Concordia College, which is used by Rosary on a cooperative rental agreement.

Admission Requirements:
M.A.: B.A. degree in liberal arts or sciences, with a minimum of 60 hours of liberal arts courses. A scholastic average of B in the last 60 hours, and evidence of professional promise.
Foreign Students: Must show evidence of proficiency in the English language.

Tuition and Fees: $60 per credit hour; total cost, $2160.

Financial Aid: $7500 scholarships; $6000 work/study grants; scholarships ranging from $300 to $1000, frequently combined with work/study grants to cover tuition and residence costs; assistantships in several library positions, requiring from 10 to 20 hours of work per week.

RUTGERS UNIVERSITY, THE STATE UNIVERSITY OF NEW JERSEY
GRADUATE SCHOOL OF LIBRARY SERVICE

189 College Avenue
New Brunswick, New Jersey 08903
(201) 247-1766, ext. 6500

Director of Program: Thomas H. Mott, Jr.; Dean (see faculty list below).

Description of Program: The major emphasis within the M.L.S. program is on education to undertake professional careers in library and information service in a variety of agencies, such as school, academic, public, and special library and information services. The M.L.S. program combines traditional and innovative training in the principles and practices of librarianship and information science, including the teaching of recent technological advances in the acquisition, organization, storage, retrieval, and dissemination of information as well as broad and fundamental training in reference, bibliographic, and research use of library and other information sources.

The program leading to the Ph.D. in Library Service is designed to contribute to the effectiveness of library leadership by preparing persons through the doctoral program to teach, conduct research, and administer library and information agencies.

Employment Preparation: Generation, processing, input and storage of information; systems analysis; management; education and research.

Degrees:
M.L.S.: 36 credits. Curriculum undergoing revision; revised program to be introduced fall term 1972. Thesis not required.
Ph.D.: Courses and seminars comprising 24 to 30 credits; seminars in Research Methods, Reader Services, Technical Services, Information Science and Technology, etc; dissertation based on research project.

Faculty:
Artandi, Susan A.; Professor of Library Service; M.L.S. Ph.D., Rutgers.
Clark, Philip M.; Executive Director, Bureau of Library and Information Science Research; M.P.A., Pennsylvania State.
DeProspo, Ernest R., Jr.; Associate Professor of Library Service; M.A., Northeastern; Ph.D., Pennsylvania State.
Mott, Thomas H., Jr.; Dean of the School; Professor of Library Service and Computer Sciences; Ph.D., Yale.
Voos, Henry; Associate Professor of Library Service; M.S., Columbia; Ph.D., Rutgers.

Students Specializing in Information Science: No data given; approximately 320 master's and 20 doctoral candidates enrolled in the School.

Information Science Courses: (credit in semester hours)
- **610:506 Theory of Cataloging and Classification** (3)
- **610:542 Audio-Visual Materials, Methods and Services** (3)
- **610:544 Film: Form and Use** (3)
- **610:547 Systems Analysis in Library Management** (3)
- **610:570 Information Science and Technology** (3) F,Sp Artandi
  An introduction to the field of information science and technology in terms of the intellectual problems which have been identified and the theory and techniques which are available or lacking for their solution. Discussions of manual and machine capabilities and of the use of computers, with emphasis upon their application and potential usefulness in information retrieval.
- **610:571 Programming Theory for Information Handling** (3) Sp Mott
  Application of the digital computer to information handling. Basic principles of computer programming; machine languages, symbolic languages, and problem-oriented languages. Programming problems related to library applications and informational use.
- **610:573 Information Networks** (3) F,Sp Voos
- **610:615 Seminar in Information Science** (3) Sp Artandi

Institutes and Short Courses: Continuing education courses and seminars in Introduction to Computers, Automation in Libraries, Introduction to PL/I Programming, etc., are scheduled periodically.

Research Opportunities for Students: Bureau of Library and Information Science Research involves doctoral students in individual research and part-time employment.

Computer Facilities: Time-sharing IBM 360/40 and batch terminals available within building.

Admission Requirements:

M.L.S.: Strong B average; letters of recommendation; G.R.E. scores; at least 50% of undergraduate courses in the liberal arts and sciences.

Ph.D.: One year of introductory professional study leading to the M.L.S. degree, or one year of graduate study leading to a master's degree in an academic discipline and study or experience in library-related organizations or in information science.

Foreign Students: Same as above plus T.O.E.F.L.

Tuition and Fees: $25 per credit hour, $220 per term full-time; $38 per term additional fees.

Financial Aid: 6 Library Service and Construction Act grants; 4 University assistantships.

SACRAMENTO STATE COLLEGE
SCHOOL OF BUSINESS ADMINISTRATION

6000 J Street
Sacramento, California 95819
(916) 454-6350

Director of Program: Dr. D. Ordell Calkins; Chairman of Graduate Programs.

Description of Program: The Master of Science degree program in Management-Information Science prepares students for professional careers in computer technology and information systems. The specialized curriculum contains the essential breadth to provide a comprehensive background for the candidate in software development, information systems design and applications, and detailed computer applications for nonprofit institutions or businesses.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research positions.

Degree:

M.S. in Management Information Science: A 2-year program consisting of a minimum of 30 semester hours beyond the baccalaureate degree. A maximum of 21 hours in specific preparatory courses is required of students without prior education in business administration. Required courses include any 3 among the following: BA 214, 215, 216, 294, or 295; 12 units of 200-level courses related to computer-information science; 8 units of approved 100- or 200-level courses related to computer-information science; and BA 502, Individual Study in Business Administration.

Faculty:

Allen, Stephen G.; M.A. in Economics, Chicago, 1950; Ph.D. in Statistics, Stanford, 1954.

Carr, Donald E.; M.S. in Agricultural Business Management, California at Davis, 1963; Ph.D. in Agricultural Production and Resource Economics and Quantitative Methods in Economics, 1971.

Freedman, Donald A.; M.B.A., Michigan, 1955.

Hopfe, Manfred W.; M.S. in Personnel, S.U.N.Y. at Albany, 1963; Ph.D. in Personnel, Ohio U., 1968.

Mogull, Robert G.; M.S. in Guidance, Long Island, 1965; M.A. in Economics, S.U.N.Y. at Buffalo, 1967; Ph.D. in Economics, West Virginia, 1969.

Stockdale, John M.; M.A. in Insurance, Iowa, 1967; Ph.D., 1970.

Students Specializing in Information Science: No data given; 19 master's candidates enrolled.

Information Science Courses: (credit in semester hours)

BA 211 Operations Research (3) F Allen

BA 214 Systems Analysis (3) F van Gigch

BA 215 Computer-Information Science (3) Sp

An intensive course covering computer systems, computer programming analysis, computer coding, management information systems, and special applications such as simulation, information retrieval and use of software.

BA 216 Advanced Programming Analysis (3) Sp

BA 294 Advanced Operations Research (3) F Allen

BA 295 Advanced Computer-Information Science (3) Sp

Advanced topics in computer-information science. Large file information retrieval, design of advanced management information systems, online real time systems, computer-aided instruction and selected other material.

Institutes and Short Courses: None listed.

Research Opportunities for Students: None listed.

Computer Facilities: CDC 3150.

Admission Requirements:

M.S.: A baccalaureate degree from an accredited college or university; an acceptable undergraduate grade point average; an acceptable score on the Admission Test for the Graduate School of Business (A.T.G.S.B.).

Foreign Students: An acceptable score on the T.O.E.F.L.

Tuition and Fees: Residents, full-time, approximately $75 per semester; residents, part-time, about $70 per semester; nonresidents, full-time, approximately $470 per semester; nonresidents, part-time, $30 per semester hour; foreign-visa students, full-time, approximately $200 per semester; foreign-visa students, part-time, $12 per semester hour.

Financial Aid: Scholarships, fellowships, teaching and research assistantships.

ST. JOHN'S UNIVERSITY
DEPARTMENT OF LIBRARY SCIENCE

Jamaica, New York 11432
(212) 969-8000, ext. 200

Director of Program: Milton F. Byam.

Description of Program: The library science program is attuned to contemporary needs. Special emphasis is placed upon today's thrust toward urbanization, on the increasingly computerized society and on the continuing emergence of new communications media. It encompasses knowledge of materials in all formats, the promotion of library resources and reference, and information dissemination. Although there is a separate course in information science and others will be added next year, the new electronic techniques are being discussed in every course and their effects on the subject under discussion are pointed out. Developments in and applications of mechanization and computerization on technical processing and cataloging, for example, are discussed in the course of Organizing and Acquiring Library Material; computerized information centers and SDI services are discussed in the course of Special Libraries and Information Centers; the impact of hardware on library operations and on library personnel is discussed in the course of Library Administration.

Employment Preparation: Librarians.

Degree:
M.L.S.: 36 credits including: Organizing Library Materials, 6 cr.; Library and Society, 3 cr.; Administration, 3 cr.; Reference, 3 cr.; Literature, 6 cr. Thesis not required.

Faculty:
Aman, Mohammed M.; Assistant Professor; M.S. in Library Science, Columbia, 1965; Ph.D. in Library and Information Science, Pittsburgh, 1968.

Students Specializing in Information Science: No data given; approximately 150 students enrolled.

Information Science Courses: (credit in semester hours)
247 Introduction to Information Science (3) Aman
The course is concerned with the intellectual factors that affect all information retrieval systems, namely: indexing policy and practice, vocabulary control, searching strategies, and interaction between the system and its users; with operations and problems involved in the selection or identification of documents and records; and with equipment and hardware.

Institutes and Short Courses: None listed.

Research Opportunities for Students: Available.

Computer Facilities: Computer Center with Honeywell installation.

Admission Requirements:
M.L.S.: Undergraduate degree; at least a B average or acceptable G.R.E. scores; one year of foreign langauge; interview.
Foreign Students: Same as above plus proficiency in English as measured by T.O.E.F.L.

Tuition and Fees: $70 per credit.

Financial Aid: 3 graduate assistantships.

SIMMONS COLLEGE
SCHOOL OF LIBRARY SCIENCE

300 The Fenway
Boston, Massachusetts 02115
(617) 738-2264

Director of Program: Kenneth R. Shaffer; Director and Professor; B.S. in L.S., Illinois, 1941; library administration, library architecture, library service to the disadvantaged, library education.

Description of Program: A library-oriented curriculum designed to prepare men and women for responsible positions of leadership in librarianship. Entirely graduate in character, the one-year program leading to the degree of master of science is open to men and women of high academic attainment and professional promise. The curriculum stresses the common body of principles that unites librarianship with information technology, and is based on a recognition that since librarianship is an applied discipline, principles and generalizations must be converted into their operational terms to be made meaningful. Students combine mastery of the content of a basic core curriculum, emphasizing principles of bibliographical organization and management applicable to both manual and machine-based systems in all types of libraries and information centers, with individual elective specializations representing the full range of types of libraries and functional activities within them. The school is perhaps best known for the development of innovative, problem-oriented teaching approaches in library education, with special emphasis on the adaptation of the case method of instruction.

Employment Preparation: Public, technical service, administrative, and supervisory positions in all types of libraries and information centers.

Degree:

M.S. in Library Science: 36 semester hours, including 5 required courses, representing 20 semester hours and comprising Current Library Issues; Reference Methods; Organization of Knowledge in Libraries; and two of the following–Literature of the Social Sciences, Literature of the Humanities, and Literature of Science and Technology. Thesis not required.

Faculty:

Chen, Ching-Chih; Assistant Professor of Library Science; A.M.L.S., Michigan, 1961; science and engineering reference.

Matarazzo, James Michael; Assistant Professor of Library Science; S.M., Simmons, 1965; administration, science and technology literature, government documents, special libraries.

Palmer, Richard Phillips; Assistant Professor of Library Science; M.A. in English, M.A.L.S., Wisconsin, 1964, 1965; Ph.D., Michigan, 1970; administration, application of computer techniques to libraries, cataloging and classification.

Sineath, Timothy Wayne; Assistant Professor of Library Science; S.M., Florida State, 1963; Ph.D., Illinois, 1970; information storage and retrieval, reference, cataloging and classification.

Students Specializing in Information Science: No data given; approximately 475 students enrolled in the School.

Information Science Courses: (credit in semester hours)

L.S. 117 Advanced Cataloguing and Classification (4) Sp,Su Sineath
L.S. 185 Electronic Information Systems (4) Sp,Su Palmer
L.S. 186 Library Systems Analysis (4) F,Sp Palmer

Institutes and Short Courses: None listed.

Research Opportunities for Students: The School offers a full range of opportunities for advanced independent study, as well as unstructured, small group seminars.

Computer Facilities: Terminal available on campus; access to other facilities arranged as required.

Admission Requirements:

M.S.: Baccalaureate in the liberal arts or sciences from an accredited college; minimum of 96 semester hours of creditable work in liberal arts or sciences exclusive of professional courses; reading knowledge of at least one modern foreign language; overall B– average, and B average in final two years of undergraduate work or major field. Admission is on a competitive basis.

Foreign Students: University of Michigan English Language Proficiency Test is required of all candidates for whom English is not the mother tongue.

Tuition and Fees: $70 per semester hour.

Financial Aid: Scholarships, fellowships, and graduate assistantships available.

UNIVERSITY OF SOUTHERN CALIFORNIA
GRADUATE SCHOOL OF LIBRARY SCIENCE

University Park
Los Angeles, California 90007
(213) 746-2548

Director of Program: Dean Martha Boaz (see faculty list below).

Description of Program: The Information Science curriculum is a library-oriented curriculum by which library school students are exposed to the fundamentals of systems analysis, data processing, programming, and non-conventional information retrieval systems. Appropriate courses examine the use of automation, and information storage and retrieval in libraries and information centers. The goal of this information science curriculum is to provide instruction for this specialized area within the general area of professional library activity.

Employment Preparation: Data base retrievalists; systems analysts, managers; teachers and researchers.

Degrees:

M.S. in L.S.: 30 units of graduate and professional courses; comprehensive examination; a scholarship average of 2.75 on a 4.0 scale. Thesis optional.

Ph.D.: 60 units of graduate work; major and minor field; research program; qualifying examinations (written and oral); dissertation; oral examination.

Faculty:

Boaz, Martha; Dean and Professor; M.S. in Library Science, Ph.D. in Library Science, Michigan, 1950, 1955.

Kazlauskas, Edward; Assistant Professor; M.S. in Library Science, Illinois, 1964.

Students Specializing in Information Science: A portion of the approximately 300 full- and part-time students in the School.

Information Science Courses: (credit in semester hours)

L.S. 568 Information Storage and Retrieval (3) Kazlauskas
L.S. 570 Automation of Library Processes and Procedures (3) Kazlauskas

Institutes and Short Courses:
Institute on Middle Management in Public Libraries: June 1-July 9, 1971. Conducted under a grant from the U.S. Office of Education. The major goal of the Institute was to improve the managerial knowledge and skills of experienced librarians.

Research Opportunities for Students: Part-time employment in special libraries and information centers; independent study and projects involving systems analysis of operating systems.

Computer Facilities: IBM 360/65; Honeywell 200; time-sharing and remote job entry.

Admission Requirements:
M.S. in L.S.: Bachelor's degree; minimum combined G.R.E. score of 825; 2.75 undergraduate grade point average on a 4.0 scale; one foreign language or 6 semester units in undergraduate library courses.
Ph.D.: M.S. in L.S.; 3 years professional experience; capacity for research and scholarship.
Foreign Students: Proficiency in English; special application and admission procedures.

Tuition and Fees: $72 per credit hour.

Financial Aid: Scholarships, fellowships available.

UNIVERSITY OF SOUTHERN MISSISSIPPI
DEPARTMENT OF LIBRARY SCIENCE

Hattiesburg, Mississippi 39401
(601) 266-7167

Director of Program: Dr. John H.M. Chen; Chairman (see faculty list below).

Description of Program: The primary aim of the Department of Library Science is to develop a sound library and information sciences program to train prospective students, at both the undergraduate and graduate levels, to be librarians, media specialists, and information scientists in various library and information areas, i.e., school libraries, academic libraries, special libraries, technical information centers, etc.

Employment Preparation: Library automation and media specialists; systems analysts and systems design specialists; library instructors who teach basic information science courses.

Degrees:
M.A. in Library Science: A minimum of 46 graduate hours is required, half of which must be in courses numbered above 500. A student may elect 8 hours in a subject field or in the area of educational media approved by the chairman of the department and his advisor. A student must also demonstrate proficiency in a modern language, and write a thesis. Appropriate graduate courses in research methods, statistics, etc., may be accepted as a part of the major when approved by the department chairman.
M.S. in Library Science: A minimum of 46 graduate hours is required, half of which must be in courses numbered 500 or above. A student may elect 8 hours in a subject field or in the area of educational media approved by the department chairman and his adviser. There is no foreign language requirement and the writing of a thesis is optional.

Faculty:
Chen, John H.M.; M.S., Virginia Polytechnic, 1957; M.S. in Library Science, Columbia, 1962; M.A. in Audio-Visual Media and Educational Technology, New York, 1964; Ed.D., Pennsylvania State, 1968.

Students Specializing in Information Science: Approximately 10 students, of about 60 master's candidates enrolled in the Department.

Information Science Courses: (credit in quarter hours)
G470 Multi-Media Materials and Services (4) Chen
G471 Library and Preparation and Production of Multi-Media Materials (4) Chen
G52[illegible] Communication and Libraries (4) Chen
Introduction to the audience, content, control, and channels of distribution of newspapers, radio, television, and motion pictures, with special attention to the relationship of the library to these media and its role as an agency of communication.
G560 Introduction to Information Science and Technology (4) Chen
Overview of approaches and techniques currently developed to meet the information demands of research oriented library users. Emphasis is placed on terminology, historical background, system design and analysis, technological development, dissemination, organization, collection, storage, retrieval, interpretation, use of information and their potential for library information services.
G561 Library Automation (4) Chen
A study of theory and practices in the application of electronic data processing equipment and utilization of automatic procedures for the performance of various library functions. Special attention is given to the augmentation of circulation, reference work, acquisitions, cataloging, book catalog, book selection, serials control, inventory control, personnel and budget procedures.
G562 Information Retrieval Systems (4) Chen
A survey and evaluation of the structure and operation of information storage and retrieval systems currently applied in libraries and information centers with special emphasis on abstracting, indexing, file organization, question analysis, research strategy, and thesaurus construction and use.

Institutes and Short Courses: Media workshops.

Research Opportunities for Students: Computer Center on campus.

Computer Facilities: 2 IBM computers on campus.

Admission Requirements:

Master's Programs: B.S. or B.A.; last two years' grade point average above 2.75 (on a 4.0 scale); high G.R.E. scores; five prerequisite library courses.

Foreign Students: Same as local students.

Tuition and Fees: State residents, full-time, $159 per quarter; nonresidents, full-time, $359 per quarter; residents, part-time, $18 per credit hour; nonresidents, part-time, $23 per credit hour.

Financial Aid: 2 graduate fellowships; scholarships.

STANFORD UNIVERSITY
DEPARTMENT OF COMMUNICATION

Stanford, California 94305
(415) 321-2300, ext. 2755

Director of Program: Edwin Parker; Director (see faculty list below).

Description of Program: Training for scientists who will develop and implement new information systems to utilize the potential of new communication technology for medical information systems, education, and other desirable social goals. There are three major segments of this program: (1) behavioral science research, (2) computer science, and (3) social institutions.

To be effective, information systems require adaption to both the information needs and information-seeking behavior of the intended users. For large-scale systems to be effective, technology must be attuned to the human users, not vice versa. Much behavioral research will be required to develop information technology into an effective man-machine symbiosis. Information technology cannot provide satisfactory media to aid human communication unless the psychological processes of both the sender and the receiver are considered.

The second component of the program is computer science. Computerized information media will require major advances in both software and equipment. Students in the program should become skilled in systems programming so they can participate effectively in the design and development of information systems and networks involving computer and other media.

The third component concerns the analysis of social institutions, procedures and policies concerning communication. It should be obvious that information systems are not instituted in an economic and a social vacuum. Knowledge of resources, social priorities, government regulations, and the nature of existing information media and institutions will be necessary in order to accomplish a transition to future systems.

Employment Preparation: University faculty or research and development careers.

Degree:

Ph.D. in Communication: About 3½ to 4 years of residence will be required to complete the doctoral program. The first two years will be largely course work, plus individual research projects during each year. Qualifying examinations are taken at the end of the first year. Comprehensive examinations will normally be taken during the third year. The remaining time will be spent in some additional course work, individual study, and dissertation research.

Faculty:

Fowkes, William; Assistant Professor, School of Medicine; M.D., Stanford, 1955.

Paisley, William; Associate Director and Associate Professor, Department of Communication; M.A. in Journalism, Syracuse, 1962; Ph.D. in Communication, Stanford, 1965.

Parker, Edwin; Director and Professor, Department of Communication; M.A. in Communication, Ph.D. in Communication, Stanford, 1960.

Roberts, Donald F.; Assistant Professor, Department of Communication; M.A. in English Literature, California at Berkeley, 1963; Ph.D. in Communication, Stanford, 1968.

Sass, Maureen; Instructor, Department of Anatomy, School of Medicine; M.D. in Medicine, Western Ontario, 1961; M.S., Australian National, 1965.

Students Specializing in Information Science: 4 doctoral candidates.

Information Science Courses: (credit in quarter hours)

211A Theory of Communication I (4-6) F,W,Sp
211B Theory of Communication II (4-6) W
211C Theory of Communication III (4-6) Sp
218 Communication Research Methods I (4) W
219 Communication Research Methods II (4) Sp
260 Introduction to Information Science (3) F Martin, Parker
Techniques for describing the organization, utilization, and growth of data collections whether stored in the mind, in society, or in computers.
261 Flow of Information Among Scientists (3) W Paisley
262 Flow of Scientific & Technical Information to the Public (3) W Paisley
263 Computer Information Systems (3) W
270 Advanced Communication Theory and Method Seminar I (3) F
271 Advanced Communication Theory and Method Seminar II (3) W
272 Advanced Communication Theory and Method Seminar III (3) Sp
275 Advanced Data Analysis (4) F Paisley

Institutes and Short Courses: None listed.

Research Opportunities for Students: Research activities are an integral part of the program, required of all students. Several funded research programs are in progress.

Computer Facilities: IBM 360/67; IBM 360/91; IBM 360/50; others.

Admission Requirements:
Ph.D.: B.A. plus high aptitude and strong motivation.
Foreign Students: Same as for U.S. students.

Tuition and Fees: $870 per quarter.

Financial Aid: Provided for all Ph.D. students admitted to the program.

SYRACUSE UNIVERSITY
SCHOOL OF LIBRARY SCIENCE

113 Euclid Avenue
Syracuse, New York 13210
(315) 476-5541, ext. 2911

Director of Program: Dr. Roger C. Greer; Dean.

Description of Program: The master's program is a library-oriented curriculum. The doctoral program is oriented toward behavioral science research and human information processing systems (interpersonal communication problems). A doctoral committee which includes all students controls admission policies, courses to be offered, etc.

Employment Preparation: At the master's level, generation, input, processing, and storage of information; at the doctoral level, education and research positions.

Degrees:
M.A. in Library Science: 36 semester hours–two undergraduate prerequisite courses (Research Methods and Information Technology) plus 10 3-credit graduate courses. Thesis not required.
Ph.D. in Information Transfer: No language requirements; doctoral seminars in information systems, behavioral science, and research methods; research practicum; thesis proposal; thesis defense; dissertation. Course work continues until advisory committee considers the student has working knowledge of the information.

Faculty:
Atherton, Pauline; Professor; M.A.L.S., Rosary Coll.
Boone, Morell D.; Lecturer; M.S.L.S., Syracuse.
Cook, Kenneth H.; Assistant Professor; Ph.D. in Journalism, Syracuse.
Dervin, Brenda; Assistant Professor; Ph.D. in Communications, Michigan State.
Dougherty, Richard; Professor; M.L.S., Ph.D. in Library Science, Rutgers.
Hershfield, Allan; Assistant Dean and Assistant Professor; M.S. in Radio-T.V., Syracuse; M.A. in Political Science, Indiana.
Katzer, Jeffrey; Assistant Professor; M.A., Pennsylvania State; Ph.D. in Communications, Michigan State.

Students Specializing in Information Science: No data given; approximately 300 graduate students enrolled in the School.

Information Science Courses: (credit in semester hours).
L.S. 452 Introduction to Information Technology (3) Boone, Dougherty
Discussion of special topics and laboratory experience involving information systems, file organization and maintenance, computers, telecommunications, microforms, reprographic and data processing equipment.
L.S. 630 Advanced Topics in Organization of Information Resources (3) Atherton
L.S. 640 Advanced Topics in Communication and Libraries (3) Katzer
L.S. 650 Advanced Topics in Library Automation & Information Systems (3) Dougherty, Atherton
L.S. 700 Seminar in Behavioral Science (3) Katzer, Dervin
Diagnosis of information needs and collection, storage, and dissemination of information.
L.S. 720 Seminar in Quantitative Research Methods for Information Transfer (3) Katzer
L.S. 730 Seminar in Information Systems (3) Atherton, Katzer, Dougherty

Institutes and Short Courses:
Seminars on Communication, Management, and Change: At intervals, usually lasting from 3 to 5 days. Topics covered include learning, meaning, and perception; small groups, complex organizations, and social structure; management techniques; the political process; diffusion of innovations; and change strategies and tactics.

Research Opportunities for Students: Practical training at Greater Syracuse Resources Center; RADC-funded research contract–SUPARS (online interactive retrieval system using psychological abstracts as data base); consulting work with FAUL, New York Division of Library Development, Florida State Library, Pennsylvania State Library, Onondaga Library System.

Computer Facilities: IBM 360/50 with approximately 100 IBM 2741 terminals around campus.

Admission Requirements:
M.A.: B average on the undergraduate level; combined G.R.E. scores (mathematics and verbal portions) of about 1000; references; interview if possible.

Ph.D.: Excellent scholastic record; bright, creative, flexible personality; upper 10 percent in both G.R.E. scores (mathematics and verbal portions); personal interview by Ph.D. committee composed of teachers and students.
Foreign Students: Same as above, plus score of 600 on T.O.E.F.L.

Tuition and Fees: $108 per credit hour.

Financial Aid: Gaylord fellowships, research assistantships, National Institute of Mental Health fellowship.

SYRACUSE UNIVERSITY
SYSTEMS AND INFORMATION SCIENCE PROGRAM

313 Link Hall
Syracuse, New York 13210
(315) GR6-5541, ext. 2368, 2369

Director of Program: Dr. Warren L. Semon; Ph.D., Harvard; switching theory, automata theory.

Description of Program: The Systems and Information Science Program is based on the need to study systems and system models, with the computer providing the practical means for such investigations. The systems concept of systems and information science applies not only to the physical and biological systems of nature, but also to the man-made systems of technology and to social and economic relationships. Problems derived from such systems provide strong incentives for advanced study in systems and system models, i.e., abstractions stated in mathematical terms.

Employment Preparation: Systems analysis, design, and research; graduate school, R&D industrial positions.

Degrees:
M.S. in Systems and Information Science: 30 semester hours; 6 hours can be thesis work. Required courses are SIS 621, 622, and 623 (9 hours).
Ph.D. in Systems and Information Science: 45 to 60 semester hours and 30 to 45 dissertation hours (90 hours total) beyond the bachelor's degree.

Faculty:
Coons, S.A.; Professor of Systems and Information Science; graphic systems.
Hu, M.; Professor of Electrical Engineering; automata, adaptive mechanisms, information processing.
Michie, D.; Visiting Professor; Chairman, Department of Machine Intelligence and Perception, Edinburgh.
Miron, M.S.; Professor of Psychology; psycholinguistics.
O'Connell, E.J.; Associate Professor of Psychology; computer simulation of cognitive processes, computer processing of natural languages.
Peterson, P.L.; Associate Professor of Philosophy; logic, epistemology, philosophy of language, semantics.
Pia, J.J.; Associate Professor of Anthropology; linguistics.
Robinson, John A.; Professor of Logic and Computer Science; Ph.D., Princeton; mathematical logic, nonnumerical computation, artificial intelligence.
Rothenberg, M.; Assistant Professor of Electrical Engineering; linguistics, speech analysis, phonetic theory.
Schwarzlander, H.; Associate Professor of Electrical Engineering; statistical communication theory, information systems.
Storm, Edward F.; Associate Professor of Systems and Information Science; Ph.D., Harvard; design and implementation of programming languages, syntax and semantics of programming languages, formal grammars.
Wolfson, R.; Professor of Economics; formal definitional systems for organizational decision theory.
Wyman, J.; Research Associate, Computing Center; programming languages, systems programming, library automation.

Students Specializing in Information Science: Approximately 300 graduate students enrolled.

Information Science Courses: (credit in semester hours)
SIS 501 Assembly Language Programming (3)
SIS 611 Advanced Computer Programming (3)
SIS 613 Formal Languages (3)
SIS 623 Fundamentals of Computer Systems (3)
SIS 650 Computer Programming Topics (3)
SIS 655 Computer Organization (3)
SIS 800 Topics in Artificial Intelligence (3)
SIS 820 Topics in Computer Graphics (3)
SIS 830 Topics in Programming Languages (3)
SIS 840 Topics in Automata Theory (3) (Not given in 1971-72).
SIS 850 Topics in Computer Systems (3) (Not given in 1971-72).
SIS 890 Topics in Systems and Information Science (3)

Institutes and Short Courses: Seminars as available.

Research Opportunities for Students: None.

Computer Facilities: IBM 360/50; PDP-10; IBM 360/20.

Admission Requirements:
M.S.: Bachelor's degree; faculty approval.
Ph.D.: Bachelor's degree; faculty approval.
Foreign Students: Academically, the same requirements as for U.S. citizens.

Tuition and Fees: $1296 per semester of 12 credit hours.

Financial Aid: More than 45 scholarships, fellowships, teaching and assistantships now being awarded each year.

UNIVERSITY OF TENNESSEE AT KNOXVILLE
GRADUATE SCHOOL OF LIBRARY AND INFORMATION SCIENCE

804 Volunteer Boulevard
Knoxville, Tennessee 37916
(615) 974-2148

Director of Program: Gary R. Purcell; Director of the School (see faculty list below).

Description of Program: The School provides a program directed toward the needs of librarianship. The program emphasis is the development of professionals capable of establishing library services appropriate to meet the cultural and intellectual needs of the Southeast.

Employment Preparation: Systems design; information systems management.

Degree:

M.S. in L.S.: 51 quarter hours, of which 21 hours are required courses (Libraries and Librarianship, Organization of Library Collections, Introduction to Reference Materials, Subject Reference & Bibliography, Management of Library Operations, Principles of Materials Selection). Thesis option may be taken for 9 hours credit.

Faculty:

Cox, Carl T.; Associate Professor; M.A., Ed.S., Ed.D., George Peabody, 1957, 1961, 1968.
Mauldin, (Miss) Eugenia; Associate Professor; M.Ed., Mississippi, 1950; M.S.L.S., Illinois, 1956.
Purcell, Gary R.; Director of the School and Associate Professor; M.L.S., U. Washington, 1959; M.A. in Political Science, Case Western Reserve, 1969.

This first year all other faculty members directly related to the Information Science Program will be recruited from the staffs at the Oak Ridge National Laboratory and the Tennessee Valley Authority Technical Library.

Students Specializing in Information Science: No data given; approximately 50 master's candidates will be enrolled in 1971-72.

Information Science Courses: (credit in quarter hours)

LIS4750 Audiovisual Methods and Techniques (3)
LIS5320 Library Systems & Services II (3) W
Networks and technical information centers.
LIS5360 Technical Libraries & Information Centers: Seminar (3) Sp
LIS5510 Multimedia Resources in Libraries (3)
LIS5610 Mass Communications & The Library (3)
LIS5690 Production and Use of Audiovisual Materials (3)
LIS5700 Automation of Library Processes (3) Sp
LIS5710 Introduction to Information Science (3) W
Covers topics such as system creation, document representation, reprography, and microforms.
LIS5720 Information Systems Analysis & Design (3) Sp
LIS5730 Information Retrieval Systems Laboratory (3)
Students index a body of documents utilizing several indexing systems and then evaluate the performance of each of those systems with respect to the retrieval of the specified documents. (Not offered 1971-72).
LIS5740 Information Processing on Computers (3)
Approaches are studied by which automation has been applied to bibliographic control, technical processes, circulation control and management functions. (Not offered 1971-72).

Institutes and Short Courses: None listed.

Research Opportunities for Students: Practical training Program in Tennessee Valley Authority Library and Oak Ridge National Laboratories, Technical Library and Information Centers.

Computer Facilities: University of Tennessee Computer Center.

Admission Requirements:

M.S.: 2.5 undergraduate grade point average on 4.0 point scale; G.R.E.; personal recommendations; personal interview when possible.

Foreign Students: T.O.E.F.L.; evidence of sufficient financial resources to complete school; chronological outline of all previous university-level education; authorized academic records, with translations when necessary.

Tuition and Fees: Tennessee residents, $105 per quarter; nonresidents, $310 per quarter.

Financial Aid: University nonservice fellowship; graduate assistantships; formal work-study programs.

UNIVERSITY OF TEXAS AT AUSTIN
DEPARTMENT OF COMPUTER SCIENCES

Austin, Texas 78712
(512) 471-7316

Director of Program: James C. Browne; Department Chairman; Professor of Physics and Computer Sciences; Ph.D. in Physics, Texas at Austin, 1960.

Norman M. Martin; Graduate Advisor; Professor of Philosophy and Computer Sciences; M.A. in Philosophy, Chicago, 1947; Ph.D. in Philosophy, California at Los Angeles, 1952.

Description of Program: The curriculum is fairly broad as information science curricula go. If an emphasis can be stated, it would be the computer and its possible applications. The normal student will have taken, before his degree, work in computer metatheory (automata theory, recursive functions, formal languages, logic); computer organization (switching theory, logical design, computer analysis); operating and programming systems (multiprocessing, compilers, systems programming); numerical analysis; nonnumerical applications (artificial intelligence, automatic documentation, data base systems, computational linguistics); and systems theory (operations research, systems analysis). Circuit design and business data processing are not included.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research positions.

Degrees:

M.S. in Computer Sciences: Completion of all undergraduate requirements, consisting of Introduction to Computer Sciences; Computer Organization and Programming; Discrete Mathematics; Information Structures; Programming Languages; Introduction to Numerical Analysis; Introduction to Operating Systems; Algorithmic Languages and Compilers; and the following mathematics courses–Linear Algebra and Matrix Calculations, and Intermediate Analysis, or Advanced Calculus for Application; plus 2 others from a recommended list. A minimum of 24 semester hours of graduate course work must be completed, including at least 15 hours of graduate-level courses, at least 15 in computer science, and at least 6 in a minor. Thesis required.

Ph.D. in Computer Sciences: Completion of all undergraduate requirments, as above; one foreign language; qualifying examination in numerical analysis, nonnumerical applications, computer and operating systems, and metatheory and organization; dissertation. Under some circumstances, one area outside computer sciences may be substituted as a doctoral qualifying examination area.

Faculty:

Bledsoe, Woodrow W.; Professor of Mathematics and Computer Sciences; M.A., Ph.D. in Mathematics, California at Berkeley, 1950, 1953; artificial intelligence, automatic theorem-proving, pattern recognition.

Bunderson, C. Victor; Associate Professor of Educational Psychology and Computer Sciences; Ph.D. in Psychology, Princeton, 1965; computer-assisted instruction.

Dale, Alfred G.; Associate Professor of Computer Sciences; Lecturer in the Graduate School of Library Science; M.B.A. in Statistics, Ph.D. in Statistics, Texas at Austin, 1953, 1961; information storage and retrieval, data base management systems.

Good, Donald I.; Assistant Professor of Computer Sciences; M.A. in Mathematics, Kansas, 1965; M.S. in Computer Sciences, Ph.D. in Computer Sciences, Wisconsin at Madison, 1967, 1970; analysis of computer programs, semantics of programming languages.

Howard, John H.; Assistant Professor of Computer Sciences; Ph.D. in Computer Sciences, Texas at Austin, 1970; operating systems, program semantics, metatheory.

Pratt, Terrence W.; Assistant Professor of Computer Sciences; M.A. in Mathematics, Ph.D. in Mathematics, Texas at Austin, 1963, 1965; programming languages, formal theory of syntax and semantics.

Simmons, Robert F.; Professor of Computer Sciences and Psychology; M.A. in Psychology, Ph.D. in Psychology, Southern California, 1950, 1954; computational linguistics, cognitive processes.

Students Specializing in Information Science: Approximately 60 master's and 60 doctoral candidates enrolled.

Information Science Courses: (credit in semester hours)

381K Artificial Intelligence (3) Sp Siklossy
383 Computer-Assisted Instruction (3) Sp O'Neal
385 Elementary Automata Theory (3) Sp Yeh
387 Automatic Documentation and Retrieval (3) F A. Dale
387K Language Oriented Retrieval (3) Sp Simmons
388 Computational Linguistics (3) F Simmons
392K Formal Theory of Computer Languages (3) Sp,Su Pratt

Institutes and Short Courses: A regular colloquium schedule, approximately biweekly throughout the school year, encompasses all aspects of computer sciences.

Research Opportunities for Students: A variety of research projects with varied funding is available; students have access to, and work with, the respond system on the 6600/6400 complex.

Computer Facilities: CDC 6600; CDC 6400; CDC 1700; IBM 1500/1800; CDC 3100; SDS 930.

Admission Requirements:

M.S. and Ph.D.: Normally a grade point average of 3.2 (on a 4.0 basis) in upper division and graduate work; G.R.E. aptitude score of 650 quantitative and 1250 total.

Foreign Students: Grade point average of 3.2 (on a 4.0 scale) in upper division and graduate work; G.R.E. aptitude score of 650 or higher on the quantitative section.

Tuition and Fees: Texas residents, full-time, $123 per semester; nonresidents, full-time, $273 per semester.

Financial Aid: Under University-wide administration–National Science Foundation traineeships, National Defense Education Act Title IV, and University fellowships; under departmental administration–teaching assistantships, research assistantships, graderships, and course consultantships.

THE UNIVERSITY OF TEXAS AT AUSTIN
GRADUATE SCHOOL OF LIBRARY SCIENCE

Box 7576, University Station
Austin, Texas 78712
(512) 471-3821

Director of Program: Stanley McElderry; Dean and Professor; B.S. in L.S., Southern California, 1941.

Description of Program: The master's and doctoral program is eclectic at this time. "Premature closure" toward any one orientation has been avoided. Information science is tentatively considered to be an area of inquiry (not yet a formalized discipline) relating to principles which underlie communication processes and information systems–natural or artificial, formal or informal. Knowledge and methods of various disciplines and professions are related to the study of the class of information processors characterized by having durable messages as the main inputs or outputs. Courses involve seminars in information science and related topics, computer-oriented courses, optional work in management (e.g. information dynamics, management information systems, general systems theory) and options in other areas.

Employment Preparation: All functional positions, with some emphasis on organization for storage (narrow specialization is avoided); all management functions; system development and redevelopment; education and research, particularly on the doctoral level.

Degrees:

M.L.S.: 36 semester hours, including Basic Information Sources, Cataloging and Classification; Introduction to Librarianship; Introduction to Information Science; Research; Systems Analysis; Automation; and Computer Based Retrieval. Thesis optional.

Ph.D. in Library Science: Two foreign languages (for one language, computer programming or statistics may be substituted); approved program of courses; qualifying examinations; dissertation; and final oral examination.

Faculty:

Dale, Alfred G.; Associate Professor; M.B.A., Ph.D. in Statistics, Texas at Austin, 1953, 1961.
Everett, Gerald D.; Computer Programmer and Lecturer in Library Automation; M.A. in Chemistry, Ph.D. in Computer Science, Texas at Austin, 1967, 1971.
Harmon, Glynn; Associate Professor; M.A. in Public Administration, California at Berkeley, 1963; M.L.S., Ph.D. in Information Science, Case Western Reserve, 1965, 1969.
Jackson, Eugene B.; Professor; B.S. in L.S., M.A. in L.S., Illinois, 1938, 1942.
McElderry, Stanley; Dean and Professor; B.S. in L.S., Southern California, 1941.
Murphy, Layton B.; Associate Professor; A.M. in L.S., Ph.D. in Library Science, Michigan, 1957, 1965.
Shapero, Alfred; Professor of Business; M.S. in Mechanical Engineering, California at Berkeley, 1950.
Simmons, Robert F.; Professor of Computer Science; M.A. in Psychology, Ph.D. in Psychology, Southern California, 1950, 1954.
Sparks, C. Glenn; Professor; M.A. in English, Texas Christian, 1949; M.L.S., Texas at Austin, 1952; Ph.D. in Library Science, Michigan, 1967.

Students Specializing in Information Science: No data given; approximately 200 master's and 20 doctoral candidates enrolled in the School.

Information Science Courses: (credit in semester hours)

385T.1 Introduction to Information Science (3) F,Sp,Su Harmon
Overview of principles underlying communication processes and transfer of information; formal and informal systems by which communication processes are realized.
385T.1 Systems Analysis (3) Sp Everett
385T.5 Computer Based Retrieval (3) Sp Dale
Library Automation (3) F Everett
Systems analysis; selection, acquisition, storage, reference and circulation components; MARC tapes; remote access file management system; performance analysis of successful and unsuccessful automation attempts.
Indexing and Abstracting (3) F Jackson
Seminar in Information Science (3) F Dale

Institutes and Short Courses: Short courses in computer science; topics vary but usually involve familiarization with a computer language (FORTRAN, COBOL, PL-1, Algol, R.P.G., etc.).

Research Opportunities for Students: Students are encouraged to identify and develop significant research topics, particularly at the doctoral level; numerous opportunities are available in connection with information-oriented federal, state, local, or business contracts.

Computer Facilities: Control Data 6600 with an extended core unit; IBM 1500/1800 CAI system; Control Data 3100; S.D.S. 930; Remote File Management Information System.

Admission Requirements:

M.L.S.: Grade point average of 3.0 on 4.0 basis; adequate performance on G.R.E.; substantial undergraduate preparation; recommendations.

Ph.D.: Superior performance at undergraduate and graduate levels; master's in library science, computer science, or other subject area; professional and scholarly potential; recommendations; superior performance on G.R.E.

Foreign Students: Above requirements apply, plus adequate knowledge of English language.

Tuition and Fees: For 12 semester hours: $50 per semester for Texas residents; $480 per semester for U.S. out-of-state students; $200 per semester for foreign students. Fees more or less according to number of semester hours enrolled.

Financial Aid: Fellowships and scholarships, usually federally supported; limited number of student assistantships available to master's candidates; teaching and research assistantships generally available to doctoral candidates.

UNIVERSITY OF TOLEDO
DEPARTMENT OF LIBRARY SCIENCE

2801 W. Bancroft Street
Toledo, Ohio 43606
(419) 531-5711, ext. 2803, 2804, 2805

Director of Program: Dr. Miles W. Martin; Chairman (see faculty list below).

Description of Program: This is a library-oriented program.

Employment Preparation: Librarians.

Degree:

M.A. in Library Science: At least 27 quarter hours of graduate credit in library science must be included within the total of 45 hours presented for the degree, and the total of graduate and undergraduate hours in library science shall be no less than 39 quarter hours. Candidates must complete Library Science 550, 554, 556, 560, 562, 652, and 666:01 or 668 or 670. In addition, candidates must complete at least 4 hours of graduate credit in their undergraduate major field, and must prepare a written research project for a minimum of 2 hours credit approved by the staff. At least 9 quarter hours of college work in a foreign language must be completed.

Faculty:

Martin, Miles W.; Chairman and Professor; M.A. in Philosophy, Ohio State, 1956; Ph.D. in Behavioral Science, Case Western Reserve, 1964.

Students Specializing in Information Science: No data given; approximately 70 master's candidates enrolled.

Information Science Courses: (credit in quarter hours)

666:02 Library Information Science. Seminar (4) Sp Martin

The structure and functions of information systems (or centers); the concept of thesaurus and its usage; the technique of indexing and abstracting; selective dissemination of information.

666:03 Library Automation Science. Seminar (4) Sp Martin

Survey of non-conventional devices and methods used in libraries: use of unit record equipment, computer, microform equipment and other mechanical equipments; basic concepts of systems analysis.

Institutes and Short Courses: None.

Research Opportunities for Students: None listed.

Computer Facilities: In the Engineering–Science Building.

Admission Requirements:

M.A.: Baccalaureate or professional degree granted by an accredited college or university; 2.7 accumulated point hour ratio on a 4.0 scale for all previous academic work or score on G.R.E.; a well-formulated objective for graduate study, and recommendations from college faculty members acquainted with his character and ability.

Foreign Students: In addition to the requirements for regular admission, all students from non-English speaking countries must take the T.O.E.F.L. and the aptitude and advanced sections of the G.R.E. All foreign students are required to have health and accident insurance at time of registration.

Tuition and Fees: Ohio residents pay $21 an hour, $250 full-time per quarter, or $750 for 3 quarters; out-of-state students pay $30 an hour, $350 full-time per quarter, or $1,050 for 3 quarters.

Financial Aid: 3 graduate assistantships.

UNIVERSITY OF TORONTO
SCHOOL OF LIBRARY SCIENCE

140 St. George Street
Toronto 181, Ontario, Canada
(416) 928-3201

Director of Program: R. Brian Land; Director and Professor; M.A., B.L.S., M.L.S., Toronto.

Description of Program: The program is at two levels: The first aims to give all students an understanding and awareness of the relationships of the new technologies to library processes and decisions, from housekeeping applications to the systems approach to library design. This is accomplished by including a programming requirement related to library processing, in the first year, and by incorporating into the entire core curriculum an exposure to the present impact of automation, micro-photography, communications, etc., on libraries wherever applicable.

The second level provides the interested student with the opportunity to study programming for library applications, file structure, file organization, online techniques for file processing, conversion problems, costs, systems analysis techniques and theory.

In the area of documentation, several courses explore the areas of information retrieval and language processing. Present techniques and research are studied and the student has ample opportunity to develop his potential for research.

Employment Preparation: Planning and implementing systems design concepts. automation projects.

Degrees:

M.L.S.: A 2-year program of 16 half-year courses, including 8 required half-courses. The first year consists of 8 half-courses and a set of programming problems; the second year may consist of 8 half-courses, or of 6 half-courses and a research project.

Ph.D. in Library Science: At least 4 full courses beyond the M.L.S. are required, including one course in advanced research methods; 2 years of full-time attendance are mandatory; comprehensives must be taken in a major and a minor field of specialization within the field of library science; dissertation.

Faculty:

Cariou, Mavis O.; Assistant Professor; M.L.S., Toronto, 1967.
Cockshutt, Margaret E.; Associate Professor; B.L.S., M.L.S., Toronto, 1949, 1964.
Damon, Gene A.; Administrative Assistant; M.L.S., Case Western Reserve, 1969.
Kurmey, William J.; Associate Professor; M.A. in Library Science, Chicago, 1964.
McLean, Isabel K.; Associate Professor; B.S. in L.S., Western Reserve, 1941; M.S., Illinois, 1956.
Packer, (Mrs.) Katherine H.; Assistant Professor; M.L.S., Michigan, 1953.
Phillips, (Mrs.) Dolores J.; B.L.S., M.L.S., Toronto, 1960, 1968.
Schabas, (Mrs.) Ann H.; Assistant Professor; A.M. in Physics, Smith, 1949; B.L.S., Toronto, 1964; M.A. in Information Science, London, 1970.

Students Specializing in Information Science: Approximately 300 master's candidates enrolled in the School; perhaps 10 to 20 specializing in information science.

Information Science Courses:

2290X Audio-Visual Materials and the Library F,Sp McLean
2610X Classification Theory F Cockshutt
2620X Theory of Subject Analysis Sp Phillips
2710X Automation of Library Processes F Packer, Schabas
2720X Characteristics of Information Structures F Kurmey
2730X Library Systems Design Sp Packer
2740X Documentation Methods F Kurmey
2750X Documentation Theory Sp Kurmey
2760X Information Organization and Retrieval Sp Kurmey
2810X Administrative Decision-Making
Feasibility research, model simulation, information management, planning and control techniques, critical path methods. (Not offered 1971-72.)

Institutes and Short Courses: None listed.

Research Opportunities for Students: Not well developed at present.

Computer Facilities: At the Computer Centre–IBM 360/65; within the School–IBM 026 keypunch, 083 sorter, 087 collator, 407 electronic accounting machine and the 870 document writing system with upper and lower case character set.

Admission Requirements:

M.L.S.: Bachelor's degree with at least B (second class) standing.
Ph.D.: M.L.S. degree or its equivalent with high academic standing.
Foreign Students: English language proficiency test (T.O.E.F.L. or Michigan).

Tuition and Fees: $525 per academic year.

Financial Aid: Several fellowships and scholarships; teaching assistantships; student loans.

UNIVERSITY OF WASHINGTON (SEATTLE)
COMPUTER SCIENCE GROUP

227 Roberts Hall, FC-10
Seattle, Washington 98195
(206) 543-1695

Director of Program: Dr. Jerre D. Noe; Chairman; Professor of Computer Science and Electrical Engineering; Ph.D., Stanford, 1948; computer system measurements and simulation, systems organization.

Dr. David B. Dekker; Graduate Program Adviser; Associate Professor of Mathematics and Computer Science; M.S., Illinois Tech., 1943; Ph.D., California at Berkeley, 1948; numerical analysis including curve fitting and numerical solution of differential equations.

Description of Program: Computer science is devoted to the representation, storage, manipulation, and presentation of information in an environment permitting automatic information systems. The computer scientist is interested in discovering the means by which information can be transformed in order to model and analyze the information transformations in the real world. This interest leads to inquiry into both the theory and the application of effective ways to represent information of all forms, effective algorithms to transform information, effective languages with which to express algorithms, effective means to monitor the process and to display the transformed information, and economic ways to accomplish all these.

Employment Preparation: Education and research positions.

Degrees:

M.S. in Computer Science, Nonthesis Option: 40 credits of course work, of which at least half must be in courses numbered 500 or above, and at least 30 credits in computer science. The remaining course work should be in supporting fields–engineering, mathematics, natural sciences, business administration, linguistics, philosophy, psychology, or medicine. The passing of an oral examination in one area of specialization is also required.

M.S. in Computer Science, Thesis Option: 31 credits of course work, with at least half in courses numbered 500 or above, and at least 24 credits in computer science. The remaining course work should be in supporting fields–engineering, mathematics, natural sciences, business administration, linguistics, philosophy, psychology, or medicine. Also required are preparation of a thesis (involving at least 9 credits of C SCI 700); and passing of an oral examination on the thesis work.

Ph.D. in Computer Science: 60 credits of course work, at least 40 of which are in courses numbered 500 or above, and about 45 credits in computer science courses (this includes course work taken toward the M.S. degree); Ph.D. qualifying examination, normally taken after completion of one year of graduate study; general examination; acceptable dissertation.

Faculty:

Baer, Jean-Loup E.; Assistant Professor of Computer Science and Electrical Engineering; M.S., Grenoble, 1963; Ph.D., California at Los Angeles, 1968; programming languages, operating systems, parallel processing, heuristic methods in operations research.

Gillespie, Robert G.; Director of Computer Center and Lecturer in Computer Science; B.A. in Mathematics, Reed Coll., 1955.

Golde, Hellmut; Professor of Electrical Engineering and Computer Science; M.S., Ph.D., Stanford, 1954, 1959; programming languages, programming systems, formal grammars.

Herriot, Robert G.; Assistant Professor of Computer Science; Ph.D., Wisconsin, 1971; programming languages, systems design, machine design.

Holden, Alistair; Associate Professor of Electrical Engineering and Computer Science; Ph.D., U. Washington, 1964; artificial intelligence, pattern recognition, symbol manipulation and list processing languages.

Hunt, Earl B.; Professor of Psychology and Computer Science; B.A., Stanford, 1954; Ph.D., Yale, 1960; interactive problem solving, artificial intelligence, software systems design.

Johnson, David L.; Professor of Electrical Engineering and Computer Science; Ph.D., Purdue, 1955; logical design of digital circuits, artificial intelligence, machine-learning modeling.

Ritchie, Robert W.; Associate Professor of Mathematics and Computer Science; M.S., Ph.D., Princeton, 1959, 1961; mathematical logic and computability theory, computational complexity, automata theory, mathematical linguistics.

Rockafellar, Ralph T.; Associate Professor of Mathematics and Computer Science; M.S., Marquette, 1959; Ph.D., Harvard, 1963; linear programming, convex programming, optimization in directed graphs.

Shaw, Alan C.; Associate Professor of Computer Science; M.S., Ph.D., Stanford, 1962, 1968; computer operating systems, pattern recognition, computer graphics.

Stanfield, Jonathan; Assistant Professor of Librarianship and Computer Science; Ph.D., Cambridge, England, 1965; information system design.

Students Specializing in Information Science: Approximately 10 master's and 37 doctoral candidates enrolled.

Information Science Courses: (credit in quarter hours)

C SCI 472 Computer Software Systems (3) W Golde, Herriot
C SCI 478 Computer Organization and Machine Language (4) F,Sp Golde, Herriot
C SCI 501, 502 Programming Languages and Systems I, II (3,3) W,Sp Golde
C SCI 508 Representation and Handling of Data Structures (3) F Baer
C SCI 510 List Processing and String Manipulation (3) Sp Holden
C SCI 531 Automata Theory I (3) W Baer
C SCI 532 Automata Theory II (3) Sp Ritchie
C SCI 551 Operating Systems (3) F Shaw
C SCI 552 Systems Programming Practicum (3) W,Sp Golde, Shaw
C SCI 573 Artificial Intelligence I (3) F Holden
C SCI 574 Artificial Intelligence II (3) W Hunt
EE 576 Information Theory and Coding I (3) W Lytle
EE 577 Information Theory and Coding II (3) Sp Lytle
EE 595 Advanced Topics in Communication Theory (3) F,W,Sp Lytle, Martin, Metz
LING 461 Syntax (Anthropology 461) (3) W

Institutes and Short Courses: None listed.

Research Opportunities for Students: Research grants and contracts are available as well as practical experience in the Computer Science Teaching Laboratory.

Computer Facilities: CDC 6400; Burroughs B5500; Sigma 5.

Admission Requirements:

M.S. and Ph.D.: Basic knowledge of programming with a procedure-oriented language (e.g., FORTRAN, ALGOL, COBOL), including the development of programming algorithms; basic knowledge of computer organization, arithmetic, and assembly language programming; mathematics through differential and integral calculus, elementary differential equations, algebra of matrices, introductory modern algebra, and fundamentals of mathematical logic (knowledge of numerical analysis is desirable but not required).

Foreign Students: Must demonstrate a satisfactory command of English and must have sufficient funds available in the U.S. to meet their expenses; may apply only for the autumn quarter.

Tuition and Fees: Residents, $185 per quarter; nonresidents, $547 per quarter.

Financial Aid: Some teaching and research assistantships.

UNIVERSITY OF WASHINGTON (SEATTLE)
SCHOOL OF LIBRARIANSHIP

133 Suzzallo Library–BL-10
Seattle, Washington 98105
(206) 543-1794

Director of Program: Irving Lieberman; Director (see faculty list below).

Description of Program: The basic program is intended to prepare college graduates for a professional career in librarianship. The curriculum is designed to provide a sound foundation in the principles and methods. These studies are required of all candidates for a degree in librarianship. In addition the student elects courses which will prepare him for a special field of library service.

The orientation to information science is basically that of the library-oriented curriculum, except that information science is not defined exclusively, or even primarily with documentation. The design and analysis of library-related information systems and networks are also important parts of the professional program.

A separate instructional program for information science does not yet exist as such; a variety of courses present an information scientific view of problems in librarianship and information handling for those students who are attracted to this approach. These courses do not stress hardware considerations, but instead are focused on conceptual and operational issues.

Employment Preparation: Documentation and information retrieval; work in research, special, large public, and academic libraries.

Degrees:

Master of Librarianship; Master of Law Librarianship: 502 or 454, 515, 516, 535, 599 and selected electives to equal 45 quarter hours. Thesis optional.

Faculty:

Lieberman, Irving; Director, School of Librarianship, and Professor; B.S. in L.S., M.A. in Adult Education, Ed.D. in Education Administration, Columbia, 1939, 1950, 1955.

Mignon, Edmond; Assistant Professor; M.A. in Music, Syracuse, 1952; M. Libr., U. Washington, 1959.

Page, Benjamin F.; Associate Professor; M.A. in L.S., Wisconsin, 1954.

Skelley, Grant; Chairman, Curriculum Committee, and Assistant Professor; M.A. in English, M. Libr., U. Washington, 1952, 1952; Ph.D. in Librarianship, California, 1968.

Smith, Richard D.; Assistant Professor; M.A. in Librarianship, Denver, 1964; Ph.D. in Librarianship, Chicago, 1970.

Stanfield, Jonathan; Assistant Professor; Ph.D. in Control Engineering, Cambridge, 1965.

Students Specializing in Information Science: No data given; approximately 200 master's candidates enrolled in the School.

Information Science Courses: (credit in quarter hours)

491 Documentation (3) Sp,Su Page

A course in the various means of recording, organizing, locating, and duplicating informational materials. Emphasis will be given to practical methods of the documentation cycle.

496 Library Analysis (3) F Stanfield

497 Computers and Libraries (3) W Stanfield

Development of computers and their role in libraries. Introduction to library automation.

498 Introduction to Document Retrieval Systems (3) Sp Stanfield

Introduction to computer-based information storage and retrieval systems for collections of documents. Design sequence including: goals, specifications, functional components, measures of performance, and evaluation.

514 The Library and Audio-Visual Materials (3) Sp,Su Lieberman

590B Foundations of the Analysis of Information (3) W Mignon

Covers theories of the growth, generation and dissemination of knowledge; formal models of information; content representation—problems of indexing and classification, with special reference to automatic methods; searching and retrieval—associative searching, Bradford functions, relevance; evaluation of system performance; behavioral and social problems; user studies and social-benefit values.

590C Indexing Theory (3) Sp Mignon

An introduction to conceptual problems of effective indexing, abstracting, and the design of classification systems, with emphasis on methods introduced since 1960.

590H Information System Design (2½) Su Stanfield

Institutes and Short Courses: None listed.

Research Opportunities for Students: Librarianship 509 (Directed Field Work) offers academic credit for 4 weeks of professional-level work as an intern on location in a selected library. While this is primarily a professional practice situation, it can be used as a research experience if the student is assigned to a library that is engaged in such activities.

Computer Facilities: Burroughs B5500; CDC 6400.

Admission Requirements:

Master's Programs: Four prerequisite courses (12 quarter hours); upper division grade point average 3.0 or above on a 4.0 scale; one year of a modern foreign language and potential for librarianship.

Foreign Students: Same as above plus T.O.E.F.L. score of 600 and one year's experience following bachelor's degree.

Tuition and Fees: 1972-1973–residents $208 per quarter, nonresidents $547 per quarter; all students are charged resident tuition in summer session.

Financial Aid: One research assistantship, one scholarship (Wm. E. Henry–$500); 10 student assistantship appointments, each for 10 hours a week over a period of 9 months (approximately $720 guaranteed).

WASHINGTON UNIVERSITY (ST. LOUIS)
DEPARTMENT OF APPLIED MATHEMATICS AND COMPUTER SCIENCE

St. Louis, Missouri 63130
(314) 863-0100, ext. 4384

Director of Program: Professor William E. Ball; Chairman (see faculty list below).

Description of Program: The graduate computer science program provides intensive studies in several areas of specialization including applied mathematics, numerical analysis, computer science, operations research, and discrete optimization. Each individual program is arranged by the student with his advisor. Such programs often draw on courses from the Mathematics, Electrical Engineering, Biomedical Engineering, Philosophy, Urban Studies, Business Administration, or Technology and Human Affairs departments.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research.

Degrees:

M.S. in Applied Mathematics and Computer Science, course option: 30 graduate semester hours plus final written examination.

M.S. in Applied Mathematics and Computer Science, thesis option: 24 course hours plus 6 research hours with a final oral examination.

Ph.D. in Applied Mathematics and Computer Science: At least 48 graduate credit hours, 24 research hours, plus a written examination, preliminary oral examination, and a final oral examination.

Faculty:

Ball, William E.; Chairman and Professor of Applied Mathematics; D. Sc.; numerical analysis, numerical solution of differential equations, compiler theory, symbolic information processing, computer programming theory.
Dammkoehler, Richard A.; Associate Professor of Computer Science; M.S.; computer programming theory, information retrieval, statistical treatment of data.
Heller, Nelson; Affiliate Professor; Ph.D., Pennsylvania, 1969; operations research.
Pollack, Seymour V.; Associate Professor of Computer Science; M.Ch.E.; computer programming theory, information systems.
Sterling, Theodor D.; Professor of Computer Science; Ph.D.; biostatistics, data processing, information systems.
Ubhaya, Vasant; Assistant Professor; Ph.D., California at Berkeley, 1971; operations research.
Weinkam, James J.; Assistant Professor of Computer Science; D. Sc.; computer programming theory, special purpose languages.

Students Specializing in Information Science: Approximately 90 master's and 20 doctoral candidates enrolled.

Information Science Courses: (credit in semester hours)

AMCS 530 **Information Processing, Storage, and Retrieval** (3) F Sterling
AMCS 531 **Computer Programming Theory I** (3) F Weinkam
AMCS 532 **Computer Programming Theory II** (3) Sp
AMCS 535 **Multiprogramming Systems**
AMCS 538 **Multiprocessing Systems** (3) F Dammkoehler
AMCS 539 **Theory of Automata and Formal Languages I, II** (3,3) F,Sp Chuang
AMCS 561 **Graphs and Networks I** (3) F Matula
AMCS 562 **Graphs and Networks II** (3) Sp
AMCS 571 **Linear Programming** (3) F Steinberg
AMCS 573 **Nonlinear Programming I** (3) F Zwart
AMCS 574 **Nonlinear Programming II** (3) Sp
AMCS 575 **Nonlinear Programming III** (3) Sp

Institutes and Short Courses: None listed.

Research Opportunities for Students: Many active programs in research laboratories as well as research work with individual professors. Assistantships are also available through both the Department and the computing facilities for more practical training.

Computer Facilities: IBM 360/50; IBM 1401; PDP-12; several time-sharing terminals, mini-computers.

Admission Requirements:

M.S. and Ph.D.: Bachelor's degree in an accredited curriculum in engineering, science, or mathematics, with at least a B average during the last 2 years of undergraduate work. Students failing to meet all of the criteria for full admission may be recommended by the Department for provisional admission.

Foreign Students: Must present evidence of financial responsibility and ability to communicate effectively in English. To demonstrate financial responsibility, the student must have his bank or a similar source send a statement certifying that funds are available for his first year of study. To prove his ability to use English satisfactorily, he must pass the T.O.E.F.L.

Tuition and Fees: $105 per semester hour.

Financial Aid: Graduate engineering traineeships providing tuition remission for 9 credit hours per semester, plus $2500 for 9 months; trainees devote half-time to assigned research or teaching. Research assistantships and federally supported fellowships are also available.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE (ST. LOUIS)
TRAINEESHIP IN COMPUTER LIBRARIANSHIP

Library
4580 Scott Avenue
St. Louis, Missouri 63110
(314) 367-6400, ext. 3711

Director of Program: Estelle Brodman (see faculty list below).

Description of Program: The purpose of this library-oriented, systems-oriented traineeship is to prepare already trained librarians to design computer systems and work with computer staffs on library and information-oriented problems. It is a one-year, post-master's traineeship underwritten by the National Library of Medicine. Students spend two months in the Medical Library, four months half-time at the Computational Facilities Center and half-time at the Library's Research Project in Machine Methods, two months working with a scientist, and three months on a research project of their own choosing.

Employment Preparation: Systems design; management; education and research positions.

Degree:

Non-degree Post-master's Program: Each student plans an individual program of 5 or 6 courses (10 credits), meetings to attend, libraries to visit; completes several research projects; and carries out one practical project in cooperation with a working scientist.

Faculty: No faculty as such, but lectures and seminars are given by:

Brodman, Estelle; Librarian and Professor of Medical History; Ph.D., 1953.
Johnson, Millard; M.S., 1969.
Miller, Philip; Systems Analyst; M.A.
Strauss, Jon; Director, Computational Facilities Center, Ph.D.

Assorted members of the Medical School and Main University campus act as advisors, seminar leaders, and research scientists for the trainees.

Students Specializing in Information Science: 3-5 nondegree students.

Information Science Courses: Given by various University departments.

Institutes and Short Courses: Various (may or may not be given by Library).

Research Opportunities for Students: Students often work on a particular problem which is being undertaken cooperatively by the Medical Library and other agencies, such as the Regional Medical Library, the Regional Medical Program, and the (St. Louis) Higher Education Coordinating Council. They also may work in departments of the Medical Center.

Computer Facilities: IBM 360/50, with 4 tape drives, disc packs, and remote input/output devices (IBM 3820); some older IBM 1401-3 equipment, optical character recognition scanners and COM equipment.

Admission Requirements: Master's degree in librarianship or an ancillary field to medicine; mathematics through calculus; American citizenship.

Tuition and Fees: Paid by the National Library of Medicine grant award.

Financial Aid: $5500 stipend, plus $250 travel, plus tuition for 10 credits of courses.

WESTERN KENTUCKY UNIVERSITY
DEPARTMENT OF LIBRARY SCIENCE

Bowling Green, Kentucky 42101
(503) 745-3446

Director of Program: Fred C. Pfister; Head of Library Science Department and Associate Professor; Ph.D., Michigan, 1970.

Description of Program: A system-oriented curriculum with emphasis on the management of information resources in elementary and secondary schools, community colleges, and other institutions where the emphasis is on learning and teaching.

Employment Preparation: Librarians, particularly school and academic librarians.

Degree:

M.A. in Education: 30 semester hours of library courses, including Research Methods; Curriculum; Organization and Administration of the Instructional Materials Center; Advanced Reference; and electives. Thesis not required.

Faculty:

Eirich, Wayne; Faculty Member in College of Commerce.
Faries, Fithian; Faculty Member in College of Education.

Students Specializing in Information Science: No data given; approximately 50 master's candidates enrolled.

Information Science Courses: (credit in semester hours)

LS 404 The Library and the Computer (3) Eirich

Examination of basic concepts of computer technology and their application to library problems; survey of new developments in the manipulation of information and the implications of these for library operations.

Educ. 445 Audio-Visual Materials and Methods (3) Faries

Institutes and Short Courses: None listed.

Research Opportunities for Students: Through the Educational Research Department a student may apply for any research project in which the government or the university has an interest. If accepted and sufficient funds are available the project may be done. Open for any research ideas.

Computer Facilities: Consultants are on staff to help students with research and projects are run through the computer at least twice a day.

Admission Requirements:

M.A.: G.R.E. aptitude tests, score of 700; undergraduate grade point average of 2.5 on a 4.0 scale.

Foreign Students: Same as above.

Tuition and Fees: Semester fee $150 (resident), $400 (nonresident); summer fee $75 (resident), $200 (nonresident).

Financial Aid: Scholarship (general academic), WKU Workship and College Work Study, National Defense student loans and Veteran's Administration benefits, graduate assistantships.

WESTERN MICHIGAN UNIVERSITY
SCHOOL OF LIBRARIANSHIP

Kalamazoo, Michigan 49001
(616) 383-1849

Director of Program: Dr. Jean E. Lowrie; Director, School of Librarianship and Professor; B.S.L.S., Western Reserve; M.A., Western Michigan; Ph.D., Western Reserve.

Description of Program: At Western Michigan University, the graduate program in information science is administered under the School of Librarianship, although courses taught in other departments are included in the curriculum and graduate students from other departments may take courses in the program. A student who wishes to obtain a degree in information science may do so in one of two ways: (1) he may take the program leading to the Master of Science (M.S.) degree, with a major in information science, or (2) he may take the program for the Master of Science in Librarianship (M.S.L.) degree, with a specialization in information science. This latter program includes the basic courses in librarianship which all the graduate students in librarianship are required to take.

The general approach of the program is to study information science as "information engineering" and to see it as the applied aspect of the communication sciences which deals with the optimum ways of transmitting, acquiring, organizing, storing and disseminating information-bearing records. There is one course (Information Storage and Retrieval) which is specifically designed to give a theoretical overview of the subject and to show the role of information work in the communication sciences, but this theoretical orientation is also included in the other courses. There are separate courses for applications of linguistics and for indexing theory. Included in the program are computer courses, studies in educational media, and others. The central aim of the program is to train students in storage, organization, and transfer methods for print and microform materials.

Employment Preparation: Administrators of special libraries and information centers which use automated techniques; library systems analysts; designers and managers of library automation projects; indexers and abstractors; administrators of information networks; teachers of information science and data processing for libraries; and researchers in library and information science.

Degree:

M.S.: 30 required hours, of which 18 hours (6 courses) are basic library courses; includes 9 hours of information science courses (634, 635 and 636), 3 hours of linguistics, and a no-credit course in FORTRAN IV programming.

Faculty:

Carroll, Hardy; Assistant Professor of Librarianship; M.S.L., Drexel Institute of Technology.
Cohen, Martin; Assistant Professor of Librarianship; M.A., Boston Teachers College.
Grotzinger, Laurel A.; Professor of Librarianship; M.S., Ph.D., Illinois.
Herrick, Earl M.; Instructor in English; M.A., Hartford Seminary Foundation.
Meagher, Jack R.; Director of Computer Center and Associate Professor of Mathematics; M.A., Michigan.

Students Specializing in Information Science: No data given; approximately 175 graduate students are enrolled in the School.

Information Science Courses: (credit in semester hours)

506 Introduction to Computers (1)

Flowcharts and computer programs will be prepared in the BASIC language to be run on a digital computer.

550 Studies in Linguistics and Related Disciplines: Computational Linguistics (3)

618 Libraries and Multi-Sensory Communications Media (3)

A study of modern multi-sensory aids employed in communicating ideas and considered in relation to their effect on libraries. Emphasis will be placed on program development through effective use of multimedia materials. Mass communications media and new instructional methods for fulfilling the objectives of libraries will be examined.

634 Data Processing for Libraries (3)
A survey, analysis, history, and evaluation of the uses of data processing equipment. Includes experience in analysis by flowcharting and in designing mechanization of a library task.
635 Information Storage and Retrieval (3)
Analyzes theories of bibliographic organization and control; surveys and evaluates methods, conventional and mechanical, for retrieval; considers trends and developments relating to library services.
636 Introduction to Abstracting and Indexing (3)
710 Independent Research in Information Science (variable credit)

Institutes and Short Courses: None listed.

Research Opportunities for Students: Special libraries and information centers are nearby for internships; library facilities are available for experimental library automation projects.

Computer Facilities: University Computer Center available, with PDP-10 computer. Teletype terminal to be available in School of Librarianship online to the University computer.

Admission Requirements: Bachelor's degree from an accredited school or university with a minimum grade point of 2.6 (B–) in the last two years of undergraduate studies, and reading proficiency in one modern foreign language. Students should have a general liberal arts background. It is helpful, although not necessary, to have some course work in basic mathematics.

Tuition and Fees: Resident graduate students, $24 per semester hour; out-of-state graduate students, $58 per semester hour.

Financial Aid: Graduate fellowships, scholarships, loan funds, work-study programs.

UNIVERSITY OF WESTERN ONTARIO
SCHOOL OF LIBRARY AND INFORMATION SCIENCE

Richmond Street, London 72, Ontario, Canada
(519) 679-3542

Director of Program: Dr. W.J. Cameron; Dean (see faculty list below).

Description of Program: The School prepares people for all types of library and information work at the same time that it emphasizes a comparative approach to each topic in order to deepen understanding. Specialization is firmly subordinated to the basic philosophy that a first professional degree must be designed to test general principles and investigate applications of them. Strong emphasis is placed upon the need for every student to gain a working philosophy of librarianship and a comparative mastery of everyday situations in all kinds of library and information work. However, within the limits imposed by a first professional degree, there are a number of areas of specialization other than by type of institution. Among them the following call for special mention: computer studies as they apply to the library and information field; the preparation of science information specialists; and Russian contributions to bibliography, librarianship, and information science.

Employment Preparation: Librarians.

Degree:

M.L.S.: A student in the 2-term program needs 10 courses to complete the degree. Courses 552 and 553 (see course list) and the Master's Seminar are required; others may be required in individual cases.

Students in the 3-term program take 15 courses. Required courses are: Humanities, Social Sciences, Science and Technology, Old World Intellectual and Cultural Foundations or New World Intellectual and Cultural Foundations, 551, 552, 553 (see course list) and the Master's Seminar.

Faculty:

Belzer, J.; Visiting Lecturer; B.S.E.E., Cooper Union.
Bird, D.A.; Assistant Professor; M.L.S.
Cameron, W.J.; Dean and Professor; M.A., Victoria, New Zealand; Ph.D., Reading.
Hotimsky, C.M.; Professor; A.C.I.A., Shanghai; M.A., Waterloo.
Neill, S.D.; Associate Professor; B.L.S., M.Ed., Toronto.
Pendrill, G.R.; M.A., Cantab; Dip. Lib., London; F.L.A. (Fellow of the Library Association of Great Britain).
Tague, J.; Associate Professor; M.L.S., Ph.D. in Information Science.
White, Janette H.; Professor; M.S., Columbia.

Students Specializing in Information Science: No data given; approximately 200 master's candidates enrolled.

Information Science Courses:

551 Linguistics and Communication Studies F Hotimsky, White
552 Introduction to Information Science W Bird, Pendrill
Definition and development of information sciences as an academic discipline; introductory concepts in computer science and systems analysis; examples of particular information systems and centers; parameters of information storage and retrieval systems—content analysis, file organization, search strategies; measuring the effectiveness of an information retrieval system.
553 Problems in the Computer Control of Information Sp Belzer
557 Mathematical Models in Information Science
558 Special Topics in the Computer Control of Information Belzer, Bird
559 Audiovisual Theory and Practice Neill

Institutes and Short Courses: None listed.

Research Opportunities for Students: Interactive document retrieval system in information science; experimental computer-produced book catalog; computer-based circulation system; computer-based data retrieval system in the area of privacy of computer data banks.

Computer Facilities: IBM 1130; IBM 360; PDP-10 (on-line time-sharing).

Admission Requirements:

M.L.S.: Must be a graduate of a recognized university or hold equivalent qualifications and must have demonstrated ability to succeed in graduate work; a reading knowledge of at least one language other than English is expected. Candidates who have an honors degree with at least second-class standing, and those who have a graduate degree with at least B standing, will be admitted to the School's 3-term program of 15 courses. Candidates with a B.L.S. (B average) from an accredited school will be admitted to the third and fourth terms of study.

Foreign Students: Evidence of sufficient funds for self-support and tuition; an overseas applicant for admission, for whom English is a second language, must submit evidence of proficiency in English.

Tuition and Fees: $537.

Financial Aid: Canadian Library Association scholarships; National Research Council of Canada scholarships; Ontario graduate fellowships.

UNIVERSITY OF WISCONSIN AT MADISON
DEPARTMENT OF COMPUTER SCIENCES

1210 West Dayton Street
Madison, Wisconsin 53706
(608) 262-4421

Director of Program: Professor G.E. Collins; Chairman; algorithms and program systems for algebraic and symbolic mathematical calculation.

Description of Program: The Department offers a broad curriculum, ranging from numerical analysis to artificial intelligence. Information science courses are integrated into both natural language computing and systems programming.

Employment Preparation: Generation, input, processing, and storage of information; systems design; management; education and research positions.

Degrees:

M.S. in Computer Sciences: 30 credits in courses numbered 400 and above, with 12 of these in courses numbered 700 or above; grade point average above 7.5 (out of 10.0) or thesis.

Ph.D. in Computer Sciences: Foreign languages; Ph.D. screening examination; preliminary examination; dissertation; final oral examination.

Faculty:

Davidson, C.H.; Professor of Electrical Engineering; computer education and computer-assisted instruction for teaching programming.

Fitzwater, D.R.; Associate Professor of Computer Sciences; definition, description, design, translation, implementation, and efficiency of programming languages and systems, applications in utility, interactive and information retrieval systems.

Klein, S.; Associate Professor of Computer Sciences and Linguistics; computational linguistics.

Koenig, E.C.; Associate Professor of Education; general systems theory, intelligent systems.

Moore, R.E.; Professor of Computer Sciences; information processing in the nervous system and interval analytic methods.

Pinkerton, T.B.; Assistant Professor of Computer Sciences; design of programming languages and their compilers, operating system algorithms, performance measurement and system evaluation.

Travis, L.E.; Associate Professor of Computer Sciences; mechanization of education, computer question answering, and artificial intelligence.

Uhr, L.M.; Professor of Computer Sciences; pattern recognition and models of intelligence.

Venezky, R.L.; Associate Professor of Computer Sciences; information storage and retrieval, natural language processing, computer applications in education.

Students Specializing in Information Science: Approximately 90 master's and 70 doctoral candidates enrolled.

Information Science Courses: (credit in semester hours)

304 **Machine Language Programming** (3) F,Sp Hine
436 **Introduction to Computer Organization** (3) F,Sp Purdom,Pinkerton
460 **Complex Information Processing** (3) Sp Venezky
464 **Information Retrieval** (3) F Wyllys, Venezky
467 **Programming Computers for Non-Numeric Applications** (3) F,Sp Landweber
525 **Linear Programming Methods** (3) F,Sp Mangasarian
536 **Introduction to Systems Programming** (3) F,Sp Desautels,Fitzwater
537 **Introduction to Operating Systems** (3) Sp Pinkerton
545 **Natural Language and Computing** (3) F Klein, Venezky
701, 702 **Construction of Compilers** (3,3) F,Sp Desautels
726, 727 **Non-Linear Programming** (3,3) F,Sp Mangasarian
731, 732 **Artificial Intelligence and Models of Thinking** (3,3) F,Sp London
736,737 **Advanced Systems Programming** (3,3) F,Sp Fitzwater
765,766 **Pattern Recognition and Adaptive Systems and Learning** (3,3) F,Sp Uhr

771 Automatic Syntactic Analysis (3) F Klein
773 Problems in Computational Linguistics (3,3) F,Sp Klein
820 Automata Theory (3) F E.F. Moore
822 Advanced Automata Theory (3) Landweber
820 Formal Grammars (3) Sp E.F. Moore

Institutes and Short Courses: None listed.

Research Opportunities for Students: Government research contracts; cooperative work with various university computing centers.

Computer Facilities: UNIVAC 1108.

Admission Requirements:

M.S.: Grade point average of 3.0 (on a 4.0 scale) and acceptance by the Department's graduate admissions committee.
Ph.D.: Grade point average of 3.5 (on a 4.0 scale) and acceptance by the Department's graduate admissions committee.
Foreign Students: Requirements same as for U.S. students, plus competence in English if this is not the student's native language.

Tuition and Fees: Residents, $297 per semester; nonresidents, $1064 per semester.

Financial Aid: Teaching assistantships, research assistantships, Computing Center assistantships, University research fellowships, National Science Foundation research fellowships, and Mathematics Research Center fellowships.

UNIVERSITY OF WISCONSIN AT MADISON
LIBRARY SCHOOL

Helen White Memorial Building
600 North Park Street
Madison, Wisconsin 53706
(608) 263-2900

Director of Program: Charles A. Bunge; M.S. in Library Science, Ph.D. in Library Science, Illinois, 1960, 1967.

Description of Program: The fundamental purpose of the school is the preparation of graduates to serve as librarians, teachers of librarianship, and investigators of library problems. The techniques, concepts, and findings of information science and technology are integrated into courses throughout the curriculum. For this reason, only one course in the curriculum is exclusively taken up with automation and computer applications, though students are frequently advised to take courses in the computer sciences department.

Employment Preparation: Catalogers, reference librarians; library circulation planners and managers, library administrators; library school teachers and researchers.

Degrees:

M.A. in Library Science, M.S. in Library Science: 30 graduate credits (typically 10 courses); one basic course is required in each of the following: cataloging, reference services, collection building, and library in society. No thesis required.

Specialist Certificate: A sixth-year degree; one year of full-time study; semester-length research or quasi-research project; oral exam.

Ph.D. in Library Science: 2-4 years study (1 in residence); outside minor; research methods course; qualifying exams in basic areas of librarianship; preliminary exam in area of specialization; thesis; final oral exam.

Faculty:

Griffin, Hillis L.; Visiting Lecturer; M.L.S. in Library Science, U. Washington, 1958.
Krikelas, James; Associate Professor; M.S. in Library Science, Wisconsin, 1959; Ph.D. in Library Science, Illinois, 1967.

Students Specializing in Information Science: No data given; nearly 200 graduate students enrolled in the School.

Information Science Courses:

Trends in Information and Document Processing (3) Sp
Analysis of data processing and information retrieval methods applied to library operations; mathematical methods of analyzing library problems.

Institutes and Short Courses: None listed.

Research Opportunities for Students: None listed.

Computer Facilities: University of Wisconsin Computing Center has wide variety of computer facilities available.

Admission Requirements:

Master's programs: Liberal arts bachelor's or equivalent; 3.0 grade point average (on 4.0 scale).
Specialist: Master's from accredited library science program; two years experience.
Ph.D.: Master's from accredited library science program; two years library experience; acceptable G.R.E. scores; one language.
Foreign Students: Applications from foreign students are not accepted unless such applicants hold a master's degree in a subject field from a United States university, *or* its equivalent, to assure that the foreign student can carry advanced work using the English language.

Tuition and Fees: In-state, $305 per semester full-time, $36.25 per credit part-time; out-of-state, $1076 per semester full-time, $76.25 per credit part-time.

Financial Aid: Teaching assistantships, $3960 per academic year for half-time; project assistantships, $3105 per academic year for half-time; nonresident fee waivers; University fellowships, $3060 per academic year.

UNIVERSITY OF WISCONSIN AT MILWAUKEE
SCHOOL OF LIBRARY AND INFORMATION SCIENCE

CHA 303
Milwaukee, Wisconsin 53201
(414) 228-4707

Director of Program: Theodore Samore; Acting Director (see faculty list below).

Description of Program: The program is a library-oriented curriculum. The students in the program are largely library school students and the curriculum includes data processing in libraries, library systems analysis, and discussion of evaluation measures in operating retrieval systems. However, the design of information systems and question-answering systems also has implications for library reference problems.

Employment Preparation: Professional positions in libraries and information centers.

Degrees:

M.A. or M.S. in Library Science: 30 semester hours with an average of B or better; 12 hours of basic library courses (4 courses); one course in library administration; and a comprehensive examination.

Faculty:

Koh, Soonja Lee; Assistant Professor; M.S. in Education, Catherine Spalding, 1966; M.L.S. (Advanced Certificate), Pittsburgh, 1970.

Samore, Theodore; Acting Director and Assistant Professor; M.A. in Philosophy and Psychology, M.A.L.S., Michigan, 1952, 1953.

Schlueter, Reinhold A.; Lecturer; B.L.S., Wisconsin, 1947.

Weintraub, D. Kathryn; Assistant Professor; A.M. in Library Science, Ph.D. in Language and Linguistics and in Library Systems, Chicago, 1960, 1970.

Students Specializing in Information Science: No data given; nearly 300 master's candidates enrolled in the School.

Information Science Courses: (credit in semester hours)

544-766-9 Organization and Evaluation of Information Systems (3) Weintraub
815-4 Advanced cataloging and Classification (3)
838-6 Introduction to Information Science and Data Processing (3)
839-4 Data Processing in Libraries I (3) Weintraub
850-1 Current Problems in Library Technology (3)

Institutes and Short Courses: The University Computing Center regularly offers programming workshops in FORTRAN which are available to library students. In addition, a workshop in COMIT is open for students who need knowledge of a string-processing language in the study of information systems.

Research Opportunities for Students: Practical training in the General Library.

Computer Facilities: There are two computers available for instructional purposes. There is an IBM 360/40 on campus and telephone access to a UNIVAC at Madison, Wisconsin.

Admission Requirements:

Master's Programs: Bachelor's degree or its equivalent with a grade point average of at least 2.75 on a 4.0 scale; G.R.E. aptitude tests; 70 semester credits of academic work outside the undergraduate major, with appropriate subject matter distribution; 4 prerequisite core courses in library science.

Foreign Students: Same requirements as for U.S. students, plus T.O.E.F.L.

Tuition and Fees: Resident, full-time, $297 per semester; resident, part-time, $35 per credit; nonresident, full-time, $1054 per semester; nonresident, part-time, $131 per credit.

Financial Aid: Research assistantships, nonresident tuition scholarships, work-study programs.

YALE UNIVERSITY
INTERDISCIPLINARY PROGRAM IN INFORMATION SCIENCE

New Haven, Connecticut 06520
(203) 436-0546

Director of Program: Professor Frederic B. Fitch; Chairman of Advisory Committee.

Description of Program: In several departments of the Graduate School courses are offered which relate to the growing field of information science. Since 1966-67, an interdisciplinary program in information science has been offered encompassing computer theory, symbolic logic, linguistic theory, and communication systems. This pattern is designed to allow greater emphasis, within existing doctoral programs, for students whose interests lie in this developing area. The student will have access to pertinent course offerings in a number of departments, but should seek admission, on the basis of preparation and future goals, to one of the following departments: Philosophy, Engineering and Applied Science, or Linguistics. Each department makes special provision for such students.

Employment Preparation: Emphasis on teaching and research positions.

Degree:

Ph.D.: If a student enters the Philosophy Department, he may, with the approval of the Philosophy Department, replace one of the four regular philosophy qualifying examinations by an examination in some part of this field. If a student enters the Department of Engineering and Applied Science, he can pursue his studies in the program entitled Communication and Control. Students with special interest in natural language may combine linguistic study with work in computer science and logic by pursuing the program in Linguistic Theory offered by the Linguistics Department.

Faculty:

Fitch, Frederic B.; Professor of Philosophy.
Irons, Edgar T.; Associate Professor of Computer Science.
Lamb, Sydney M.; Professor of Linguistics.
Narendra, Kumpati S.; Professor of Engineering and Applied Science.
Perlis, Alan J.; Professor of Computer Science.
Schultheiss, Peter M.; Professor of Engineering and Applied Science.
Schultz, Martin H.; Associate Professor of Computer Science.
Thomason, Richmond H.; Associate Professor of Philosophy.
Tuteur, Franz B.; Professor of Engineering and Applied Science.
Weiner, Peter; Associate Professor of Computer Science.

Students Specializing in Information Science: No data given; doctoral students enrolled in various departments.

Information Science Courses: Offered in several departments, particularly Computer Science, Engineering and Applied Science, Philosophy, and Linguistics.

Institutes and Short Courses: None listed.

Research Opportunities for Students: Various, in different departments.

Computer Facilities: Not listed.

Admission Requirements: Determined by department to which application is made.

Tuition and Fees: Not given.

Financial Aid: Not listed.

INDEXES

Abbreviations of Departments Used in the Indexes

BA	Business Administration
C	Computer Science
Comm.	Communication
EdM	Educational Media
EE	Electrical Engineering
IE	Industrial Engineering
IS	Information Science
L	Library Science
Med. L	Medical Librarianship
Sci. I	Science Information

INDEX OF EDUCATIONAL INSTITUTIONS BY STATE AND PROVINCE

ALABAMA
- Auburn University; Department of Educational Media
- Auburn University; Electrical Engineering Department
- Auburn University; Department of Industrial Engineering

ALBERTA
- University of Alberta; School of Library Science

BRITISH COLUMBIA
- University of British Columbia; School of Librarianship

CALIFORNIA
- University of California at Berkeley; School of Librarianship
- University of California at Los Angeles; Computer Science Department
- University of California at Los Angeles; Graduate School of Library Service
- University of California at Los Angeles; Graduate Training Program in Medical Librarianship
- Sacramento State College; School of Business Administration
- University of Southern California; Graduate School of Library Science
- Stanford University; Department of Communication

COLORADO
- University of Denver; Graduate School of Librarianship

CONNECTICUT
- Yale University; Interdisciplinary Program in Information Science

DISTRICT OF COLUMBIA
- American University; Center for Technology and Administration

FLORIDA
- Florida State University; School of Library Science

GEORGIA
- Emory University; Division of Librarianship
- Georgia Institute of Technology; School of Information and Computer Science

ILLINOIS
- Bradley University; Computer Science Department
- University of Chicago; Committee on Information Sciences
- University of Chicago; Graduate Library School
- University of Illinois; Graduate School of Library Science
- Illinois Institute of Technology; Department of Computer Science
- Illinois Institute of Technology; Science Information Program
- Northern Illinois University; Department of Library Science
- Rosary College; Graduate School of Library Science

INDIANA
- Indiana University; Graduate Library School

IOWA
- University of Iowa; School of Library Science
- Iowa State University; Department of Computer Science

KANSAS
- Kansas State University; Department of Computer Science

KENTUCKY
- University of Kentucky; College of Library Science
- Western Kentucky University; Department of Library Science

MARYLAND
- University of Maryland; Computer Science Center
- University of Maryland; School of Library and Information Services

MASSACHUSETTS
- Harvard University; Division of Engineering and Applied Physics; Center for Research in Computing Technology
- Massachusetts Institute of Technology; Electrical Engineering Department
- Simmons College; School of Library Science

MICHIGAN
- University of Michigan; Department of Computer and Communication Sciences
- University of Michigan; Department of Industrial Engineering
- University of Michigan; School of Library Science
- Western Michigan University; School of Librarianship

MISSISSIPPI
- University of Southern Mississippi; Department of Library Science

MINNESOTA
- University of Minnesota; Library School

MISSOURI
- University of Missouri at Columbia; School of Library and Informational Science
- University of Missouri at Rolla; Computer Science Department
- Washington University (St. Louis); Department of Applied Mathematics and Computer Science
- Washington University School of Medicine (St. Louis); Traineeship in Computer Librarianship

NEW JERSEY
- Rutgers University, The State University of New Jersey; Graduate School of Library Service

NEW YORK
- Columbia University; School of Library Service
- Cornell University; Department of Computer Science
- Long Island University; Palmer Graduate Library School
- City University of New York; Center for the Advancement of Library-Information Science
- City University of New York, Queens College; Library Science Department
- State University of New York at Albany; School of Library and Information Science
- State University of New York at Buffalo; School of Information and Library Studies
- Pratt Institute; Graduate School of Library and Information Science
- St. John's University; Department of Library Science
- Syracuse University; School of Library Science
- Syracuse University; Systems and Information Science Program

NEVADA
- University of Nevada

NORTH CAROLINA
- East Carolina University; Department of Library Science
- University of North Carolina at Chapel Hill; Department of Computer Science
- University of North Carolina at Chapel Hill; School of Library Science

NOVA SCOTIA
- Dalhousie University; School of Library Service

OHIO
- Case Western Reserve University; School of Library Science
- University of Dayton; Graduate Program in Information Science
- Kent State University; School of Library Science
- Ohio State University; Department of Computer and Information Science
- University of Toledo; Department of Library Science

OKLAHOMA
- University of Oklahoma; Graduate Program in Information and Computing Sciences

ONTARIO
- University of Toronto; School of Library Science
- University of Western Ontario; School of Library and Information Science

OREGON
- University of Oregon; School of Librarianship

PENNSYLVANIA
- Drexel University; Graduate School of Library Science
- Lehigh University; Graduate Studies and Research in the Information Sciences
- University of Pennsylvania; Moore School of Electrical Engineering
- Pennsylvania State University; Department of Computer Science
- University of Pittsburgh; Department of Computer Science
- University of Pittsburgh; Interdisciplinary Doctoral Program in Information Science

QUEBEC
- McGill University; Graduate School of Library Science
- Université de Montréal; Ecole de Bibliothéconomie

TENNESSEE
- George Peabody College for Teachers; School of Library Science
- University of Tennessee at Knoxville; Graduate School of Library and Information Science

TEXAS
- University of Houston; Computer Science Department
- University of Texas at Austin; Department of Computer Sciences
- University of Texas at Austin; Graduate School of Library Science

WASHINGTON (STATE)
- University of Washington (Seattle); Computer Science Group
- University of Washington (Seattle); School of Librarianship

WISCONSIN
- University of Wisconsin at Madison; Department of Computer Sciences
- University of Wisconsin at Madison; Library School
- University of Wisconsin at Milwaukee; School of Library and Information Science

INDEX OF DEGREES OFFERED

Advance Master's	Florida State (L)
A.M.	Harvard (C)
A.M. in Library Science	Chicago (L)
A.M.L.S.	Michigan (L)
B.L.S.	Alberta (L)
Certificate of Advanced Studies	Denver (L)
Certificate of Advanced Study	Chicago (L); Illinois (L)
Certificate of Specialization in Library Science in the Field of Systems Analysis and Information	California at Los Angeles (L)
Certificate of Specialization, Post-Master's	California at Los Angeles (Med. L)
D.A.S.L. (Diploma for Advanced Studies in Librarianship)	Emory (L)
D.L.S.	Columbia (L); Illinois (L)
D.L.S. in librarianship and information science	California at Berkeley (L)
Doctoral program	American (BA); Florida State (L)
Ed.S.	George Peabody (L)
Electrical Engineer	M.I.T. (EE)
Maitrise en bibliotheconomie	Montreal (L)
M.A.	Denver (L)
M.A. in Computer Science	Cornell (C)
M.A. in Education	Western Kentucky (L)
M.A. in Librarianship	Emory (L)
M.A. in Library Science	Iowa (L); Kentucky (L); Minnesota (L); Northern Illinois (L); Rosary (L); Southern Mississippi (L); Syracuse (L); Toledo (L); Wisconsin at Madison (L); Wisconsin at Milwaukee (L)
M.A. with specialization in information science	Florida State (L)
Master of Electrical Engineering	Auburn (EE)
M.Ed. with a concentration in Educational Media	Auburn (EdM)
M.Ln.	Emory (L)
M.L.S.	Alberta (L); British Columbia (L); California at Berkeley (L); Dalhousie (L); East Carolina (L); George Peabody (L); Kent State (L); New York (CUNY), Queens (L); New York (SUNY) at Albany (L); New York (SUNY) at Buffalo (L); Oregon (L); Pratt (L); Rutgers (L); St. John's (New York) (L); Texas at Austin (L); Toronto (L); Western Ontario (L)
M.L.S.–Information Specialist (Chemistry)	Indiana (L)
M.L.S. with Information Science Option	Maryland (L)
M.L.S. with specialization in Information Science	Indiana (L)
Master of Law Librarianship	Washington (Seattle) (L)
Master of Librarianship	Washington (Seattle) (L)
M.S.	Columbia (L); I.I.T. (Sci. I); Long Island (L); Western Michigan (L)
M.S. in Applied Mathematics and Computer Science	Washington (St. Louis) (C)
M.S. in Computer and Communication Sciences	Michigan (C)
M.S. in Computer and Information Science	Ohio State (C); Pennsylvania (EE)
M.S. in Computer Science	Bradley (C); California at Los Angeles (C); Houston (C); I.I.T. (C); Iowa State (C); Kansas State (C); Maryland (C); Missouri at Rolla (C); North Carolina at Chapel Hill (C); Pennsylvania State (C); Pittsburgh (C); Washington (Seattle) (C)
M.S. in Computer Sciences	Texas at Austin (C); Wisconsin at Madison (C)
M.S. in Electrical Engineering	Auburn (EE)
M.S. in Industrial Engineering	Auburn (IE); Michigan (IE)
M.S. in Information and Computer Science	Georgia Tech (IS)
M.S. in Information and Computing Sciences	Oklahoma (C)
M.S. in Information Science	Dayton (IS)
M.S. in Information Science (Documentation)	California at Los Angeles (L)
M.S. in Library Science	Illinois (L); Kentucky (L); Long Island (L); Simmons (L); Southern California (L); Southern Mississippi (L); Tennessee at Knoxville (L); Wisconsin at Milwaukee (L)
M.S. in Library Science with specialization in Information Science	Case Western Reserve (L); Florida State (L)
M.S. in Library Science with specialization in Information Systems	North Carolina at Chapel Hill (L)
M.S. in Management Information Science	Sacramento State (BA)
M.S. in Systems and Information Science	Syracuse (IS)
M.S. in Technology of Management	American (BA)
M.S.T. in Computer Science	I.I.T. (C)
M.S. with Specialization in Information Science	Drexel (L)
Master's Program in Information and Computer Science	Nevada (C)

Ph.D.	Case Western Reserve (L); Chicago (L); Harvard (C); Michigan (C); New York (SUNY) at Albany (L); Rutgers (L); Southern California (L); Yale (IS)
Ph.D. in Applied Mathematics and Computer Science	Washington (St. Louis) (C)
Ph.D. in Communications	Stanford (Comm.)
Ph.D. in Computer and Information Science	Ohio State (C); Pennsylvania (EE)
Ph.D. in Computer Science	California at Los Angeles (C); Cornell (C); Iowa State (C); Kansas State (C); Maryland (C); North Carolina at Chapel Hill (C); Pennsylvania State (C); Pittsburgh (C); Washington (Seattle) (C)
Ph.D. in Computer Sciences	Texas at Austin (C); Wisconsin at Madison (C)
Ph.D. in Electrical Engineering	Auburn (EE); M.I.T. (EE)
Ph.D. in Industrial Engineering	Michigan (IE)
Ph.D. in Information and Computer Science	Georgia Tech (IS)
Ph.D. in Information and Computing Sciences	Oklahoma (C)
Ph.D. in Information Science	Indiana (L); Pittsburgh (IS)
Ph.D. in Information Sciences	Chicago (IS)
Ph.D. in Information Transfer	Syracuse (L)
Ph.D. in Library and Information Science	California at Berkeley (L)
Ph.D. in Library and Information Services	Maryland (L)
Ph.D. in Library Science	Illinois (L); Michigan (L); Minnesota (L); Texas at Austin (L); Toronto (L); Wisconsin at Madison (L)
Ph.D. in Mathematics with emphasis in Computer Science	Missouri at Rolla (C)
Ph.D. in Systems and Information Science	Syracuse (IS)
Ph.D. with minor in librarianship	Oregon (L)
Post-Master's Certificate of Specialization	California at Los Angeles (Med. L)
Post-Master's programs	California at Los Angeles (Med. L); Chicago (L); Denver (L); Emory (L); Florida State (L); Minnesota (L); New York (CUNY) (L); Washington (St. Louis) (L); Wisconsin at Madison (L)
Professional Degree in Industrial Engineering	Michigan (IE)
S.M.	Harvard (C)
S.M. in Electrical Engineering	M.I.T. (EE)
S.M. in Information Sciences	Chicago (IS)
Specialist Certificate	Minnesota (L); Wisconsin at Madison (L)

INDEX OF INFORMATION SCIENCE COURSES OFFERED

Abstracting and indexing

American (BA)	55.653
Drexel (L)	.816
Florida State (L)	.587
New York (SUNY) at Buffalo (L)	.514
Pratt (L)	.512
Rosary (L)	.540
Texas at Austin (L)	not numbered
Western Michigan (L)	.636

Administration *see* **Management**

Administrative information systems
see **Management information systems**

Artificial intelligence

California at Los Angeles (C)	223E
Case Western Reserve (L)	.674
Georgia Tech (IS)	.647
Kansas State (C)	.635
Maryland (C)	.730
M.I.T. (EE)	6.258,6.544,18.435,6.545
Missouri at Rolla (C)	.447
Ohio State (C)	725,730,778.04,888.04
Oklahoma (C)	.6953
Pennsylvania (EE)	.582,591,683
Pittsburgh (C)	.277
Pittsburgh (IS)	.253
Syracuse (IS)	.800
Texas at Austin (C)	381K
Washington (Seattle) (C)	573,574
Wisconsin at Madison (C)	731,732

Assemblers *see* **Programming systems**

Audiovisual resources *see* **Media**

Automata theory

Chicago (IS)	.326
Cornell (C)	.485,486,681
Georgia Tech (IS)	.726
Harvard (C)	294r,297
Houston (C)	434,638
Kansas State (C)	701,801
Maryland (C)	.640,740,840
M.I.T. (EE)	6.253,18.248
Michigan (C)	.522
North Carolina at Chapel Hill (C)	280,281
Ohio State (C)	.726,727,728,788.03,888.03
Oklahoma (C)	.5613
Pennsylvania (EE)	.640
Pennsylvania State (C)	500,501,568-569
Pittsburgh (C)	216,218
Syracuse (IS)	.840
Texas at Austin (C)	.385
Washington (Seattle) (C)	531,532
Washington (St. Louis) (C)	.539
Wisconsin at Madison (C)	820,822

Automatic data processing systems
see **Computer systems**

Automatic language processing
see also **Computational linguistics; Mechanical translation**

American (BA)	55.650
Case Western Reserve (L)	.576
Chicago (IS)	.376
Chicago (L)	.405
Drexel (L)	.818
North Carolina at Chapel Hill (C)	171,219X
Ohio State (C)	.754
Oklahoma (C)	.5803
Pennsylvania (EE)	.679
Pittsburgh (C)	283,284
Pittsburgh (IS)	.213
Texas at Austin (C)	387K
Wisconsin at Madison (C)	545,771

Automatic question-answering

California at Berkeley (L)	.243
Harvard (C)	.221

Automation and libraries

Alberta (L)	.409
American (BA)	55.655
British Columbia (L)	.626
California at Berkeley (L)	275,276
California at Los Angeles (Med. L)	.440
Case Western Reserve (L)	.572
Columbia (L)	S8061G
Dalhousie (L)	.207
Drexel (L)	.873
East Carolina (L)	.413
Emory (L)	.342
George Peabody (L)	.381
Illinois (L)	.415,450C
I.I.T. (Sci.I)	.not numbered
Indiana (L)	.584
Kent State (L)	.640
Kentucky (L)	.606
Maryland (L)	.705
Michigan (L)	.561
Minnesota (L)	8-411
Montreal (L)	.680
New York (CUNY), Queens (L)	766TA,790.1YD
New York (SUNY) at Albany (L)	.636
New York (SUNY) at Buffalo (L)	.566
North Carolina at Chapel Hill (L)	.255
Oregon (L)	.572
Pittsburgh (IS)	251,252
Pratt (L)	.515
Rosary (L)	.536
Southern California (L)	.570
Southern Mississippi (L)	.561
Syracuse (L)	.650
Tennessee at Knoxville (L)	5700,5740
Texas at Austin (L)	.not numbered
Toledo (L)	.666:03
Toronto (L)	2710X
Washington (Seattle) (L)	.497
Western Kentucky (L)	.404
Western Michigan (L)	.634
Wisconsin at Milwaukee (L)	839-4,850-1

Business data processing

California at Los Angeles (Med. L)	.113A,113B
Missouri at Rolla (C)	.168

Business information systems
see **Management information systems**

Classification theory

Alberta (L)	.437
British Columbia (L)	.624
Case Western Reserve (L)	538,540,640,641
Columbia (L)	K8041x
Denver (L)	.97-420.5
Drexel (L)	.807,810,820
Florida State (L)	.526
George Peabody (L)	.311
Illinois (L)	.408
Indiana (L)	.583
Minnesota (L)	8-402
Montreal (L)	.652

New York (CUNY), Queens (L)	773
New York (SUNY) at Albany (L)	635
New York (SUNY) at Buffalo (L)	562
Pittsburgh (IS)	208
Rutgers (L)	506
Simmons (L)	117
Syracuse (L)	630
Toronto (L)	2610X
Wisconsin at Milwaukee (L)	815-4

Cognitive systems

Chicago (IS)	371
Georgia Tech (IS)	646

Communication and libraries

Illinois (L)	409
Montreal (L)	675
New York (SUNY) at Albany (L)	602
Southern Mississippi (L)	525
Syracuse (L)	640
Tennessee at Knoxville (L)	5610
Western Michigan (L)	618
Western Ontario (L)	551

Communication and the sciences

California at Los Angeles (C)	226R
Chicago (L)	417
Maryland (L)	807
Ohio State (C)	805
Stanford (Comm.)	261,262

Communication systems

I.I.T. (C)	480

Communication theory

Chicago (IS)	322,375
Chicago (L)	404
Georgia Tech (IS)	607,621
Maryland (L)	837
M.I.T. (EE)	6.574
New York (SUNY) at Albany (L)	613
New York (SUNY) at Buffalo (L)	531
Oregon (L)	507
Pennsylvania (EE)	648
Pittsburgh (IS)	209,228
Pratt (L)	516
Stanford (Comm.)	211A-219,270-275
Washington (Seattle) (C)	595

Compilers *see* **Programming systems**

Computational linguistics *see also*
Automatic language processing; Linguistics (natural languages)

Georgia Tech (IS)	609
Harvard (C)	294r
Kansas State (C)	800
Maryland (C)	723,725
M.I.T. (EE)	23.772
Ohio State (C)	720,820
Pennsylvania (EE)	501,540,550,559,600,601
Pittsburgh (C)	226,227
Texas at Austin (C)	388
Western Michigan (L)	550
Wisconsin at Madison (C)	773

Computer-assisted instruction
see **Computers in Education**

Computer graphics

Harvard (C)	252a,252br
I.I.T. (C)	513
Michigan (IE)	478,578,878
Pennsylvania (EE)	580A
Pennsylvania State (C)	470
Syracuse (IS)	820

Computer organization

Chicago (IS)	310
Cornell (C)	401
Houston (C)	241,681
Kansas State (C)	425
Maryland (C)	410
Pennsylvania State (C)	411
Syracuse (IS)	655
Washington (Seattle) (C)	478
Wisconsin at Madison (C)	436

Computer programming *see*
Programming (basic); Programming (higher levels)

Computer science (basic)

British Columbia (L)	535
Chicago (L)	318
Columbia (L)	K6123x
Denver (L)	97-423
Harvard (C)	112
Houston (C)	681
Indiana (L)	643
Kansas State (C)	798
Maryland (C)	210,314
Michigan (IE)	373
Sacramento State (BA)	215
Western Michigan (L)	506

Computer science (seminars)

Iowa State (C)	610
Ohio State (C)	788,888

Computer systems

American (BA)	55.530,55.561,55.635,55.730
Auburn (EE)	640
California at Los Angeles (C)	124D,298
Chicago (IS)	310
Cornell (C)	401,IE9580,IE9582
Georgia Tech (IS)	458,658
Houston (C)	433
Maryland (C)	610
M.I.T. (EE)	6.535,15.571T
Michigan (C)	410
Pennsylvania (EE)	543
Pennsylvania State (C)	410
Pittsburgh (C)	292
Pittsburgh (IS)	277,278
Syracuse (IS)	623,850
Washington (St. Louis) (C)	538

Computers and society

California at Los Angeles (C)	226R
Pittsburgh (IS)	282

Computers in education

Columbia (L)	S8061G
George Peabody (L)	Ed287
Harvard (C)	271
I.I.T. (C)	562
Pittsburgh (C)	294,296
Pittsburgh (IS)	257
Texas at Austin (C)	383

Computers in the behavioral sciences

George Peabody (L)	Ps211
North Carolina at Chapel Hill (C)	119
North Carolina at Chapel Hill (L)	103
Pittsburgh (IS)	207,229

Computers in the humanities

Case Western Reserve (L)	579
North Carolina at Chapel Hill (C)	119
North Carolina at Chapel Hill (L)	103

Cybernetics
- Auburn (EdM) ... 470
- Maryland (C) ... 737
- Maryland (L) ... 737
- Pittsburgh (IS) ... 212

Data base systems *see* **Information systems**

Data processing for libraries *see* **Automation and libraries**

Data structures *see* **Information structures**

Datamation *see* **Computer science (basic)**

Decision analysis
- Michigan (IE) ... 460,560,660
- Toronto (L) ... 2810X

Decision theory
- Harvard ... 119,215

Design of information systems
- Case Western Reserve (L) ... 671,673
- Florida State (L) ... 588
- Georgia Tech (IS) ... 636-637,706
- M.I.T. (EE) ... 15.569
- Michigan (IE) ... 573
- Tennessee at Knoxville (L) ... 5720
- Washington (Seattle) (L) ... 590H

Documentation
- British Columbia (L) ... 621,622
- George Peabody (L) ... 382
- Maryland (L) ... 650
- Michigan (L) ... 550
- Texas at Austin (C) ... 387
- Toronto (L) ... 2740X,2750X
- Washington (Seattle) (L) ... 491

Error-correcting codes
- Pennsylvania State (C) ... 450

Evaluation of information systems
- California at Berkeley (L) ... 246
- California at Los Angeles (Med. L) ... 240
- Case Western Reserve (L) ... 673
- Drexel (L) ... 856
- Florida State (L) ... 588
- Georgia Tech (IS) ... 736
- Illinois (L) ... 444
- Maryland (L) ... 657,757,855
- Michigan (IE) ... 673,773
- Pittsburgh (IS) ... 279,280
- Tennessee at Knoxville (L) ... 5720,5730
- Washington (Seattle) (L) ... 496

File management
- I.I.T. (C) ... 325
- North Carolina at Chapel Hill (C) ... 135
- Pittsburgh (C) ... 255

File structures
- Ohio State (C) ... 780

Formal languages *see* **Programming languages**

Heuristic programming
- California at Los Angeles (C) ... 223E
- M.I.T. (EE) ... 6.544
- Oklahoma (C) ... 6953

Hospital systems
- Michigan (IE) ... 495,801

Human engineering
- Auburn (IE) ... 464,665
- Michigan (IE) ... 333,433,633,836
- Ohio State (C) ... 620,816

Human factors in information systems
- Ohio State (C) ... 788.14,865,888.14
- Pittsburgh (IS) ... 230
- Syracuse (L) ... 700

Image processing *see also* **Pattern recognition**
- Cornell (C) ... 517
- I.I.T. (C) ... 514
- Maryland (C) ... 733
- M.I.T. (EE) ... 6.613

Indexing
- Chicago (L) ... 403
- Columbia (L) ... K6321y
- Drexel (L) ... 810
- Illinois (L) ... 450B
- Maryland (L) ... 653
- Montreal (L) ... 653L
- New York (CUNY) (L) ... not numbered
- New York (CUNY), Queens (L) ... 790.3TB
- Ohio State (C) ... 753
- Syracuse (L) ... 630
- Toronto (L) ... 2620X
- Washington (Seattle) (L) ... 590C

Industrial dynamics
- Auburn (IE) ... 616

Information centers
- British Columbia (L) ... 644
- Case Western Reserve (L) ... 578
- Drexel (L) ... 871
- New York (SUNY) at Buffalo (L) ... 582
- Pittsburgh (IS) ... 281
- Pratt (L) ... 517
- Tennessee at Knoxville (L) ... 5320,5360

Information control *see also* **Documentation**
- Georgia Tech (IS) ... 607,616

Information industry
- Georgia Tech (IS) ... 673

Information networks
- California at Berkeley (L) ... 296A
- Illinois (L) ... 434
- Maryland (L) ... 627,740,815
- New York (SUNY) at Albany (L) ... 615
- New York (SUNY) at Buffalo (L) ... 591
- Rutgers (L) ... 573
- Tennessee at Knoxville (L) ... 5320

Information presentation
- Pittsburgh (IS) ... 276

Information processing *see* **Information retrieval (basic); Information retrieval (higher levels); Information retrieval (seminars)**

Information retrieval (basic)
see also **Search strategy**
- American (BA) ... 55.651
- California at Berkeley (L) ... 241
- Case Western Reserve (L) ... 573
- Chicago (IS) ... 383
- Chicago (L) ... 403,406
- Columbia (L) ... K8033x
- Cornell (C) ... 435
- Emory (L) ... 323

George Peabody (L)	.382
Georgia Tech (IS)	626,627
Harvard (C)	.221
Houston (C)	.634
Illinois (L)	.429
I.I.T. (C)	.510
I.I.T. (Sci.I)	.not numbered
Indiana (L)	.644
Kansas State (C)	.670
Kent State (L)	.641
Maryland (C)	.620
Maryland (L)	.656
Michigan (IE)	.575
Michigan (L)	.550
Minnesota (L)	8-402
Missouri at Rolla (C)	.339
New York (CUNY) (L)	.not numbered
New York (SUNY) at Albany (L)	603,633
New York (SUNY) at Buffalo (L)	560,561
North Carolina at Chapel Hill (C)	.172
North Carolina at Chapel Hill (L)	.172
Ohio State (C)	750,751
Pennsylvania State (C)	.545
Pratt (L)	.514
Simmons (L)	.185
Southern California (L)	.568
Southern Mississippi (L)	.562
Stanford (Comm.)	.263
Texas at Austin (C)	.387
Texas at Austin (L)	385T.5
Toronto (L)	2760X
Washington (Seattle) (C)	.510
Washington (Seattle) (L)	.498
Washington (St. Louis) (C)	.530
Western Michigan (L)	.635
Western Ontario (L)	.553
Wisconsin at Madison (C)	.464
Wisconsin at Milwaukee (L)	.544-766-9

Information retrieval (higher levels)

American (BA)	55.654
California at Berkeley (L)	.242A-B,243,256
Case Western Reserve (L)	575,577
Georgia Tech (IS)	.653
Maryland (C)	.720
Ohio State (C)	.752,850,851
Pittsburgh (IS)	.213,250,275
Wisconsin at Madison (C)	.460

Information retrieval (seminars)

Case Western Reserve (L)	.574
Chicago (L)	407,411
Columbia (L)	K9033y
Cornell (C)	.635
New York (CUNY), Queens (L)	.790
Northern Illinois (L)	.552
Ohio State (C)	788.02,788.14,888.02,888.14
Pennsylvania (EE)	.673
Western Ontario (L)	.558

Information science (basic)

American (BA)	55.550
California at Berkeley (L)	.240
Case Western Reserve (L)	.524
Denver (L)	97-424
Florida State L	.586
Indiana (L)	.544
Iowa (L)	21:246
Kentucky (L)	.605
Long Island (L)	.615
Montreal (L)	.645
Pittsburgh (IS)	200,201
Pratt (L)	.511
Rutgers (L)	.570
Sacramento State (BA)	.215
St. John's (New York) (L)	.247
Southern Mississippi (L)	.560
Stanford (Comm.)	.260
Syracuse (L)	.452
Tennessee at Knoxville (L)	.5710
Texas at Austin (L)	385T.1
Toledo (L)	666:02
Washington (Seattle) (L)	590B
Western Ontario (L)	.552
Wisconsin at Madison (L)	.not numbered
Wisconsin at Milwaukee (L)	838-6

Information science (higher levels)

Indiana (L)	.763
Sacramento State (BA)	.295
Texas at Austin (C)	387K

Information science (seminars)

Chicago (IS)	.400
Indiana (L)	.764
Ohio State (C)	.865
Pittsburgh (IS)	.224,249,274,295-399
Rutgers (L)	.615
Syracuse (L)	.730
Syracuse (IS)	.890
Texas at Austin (L)	.not numbered
Western Michigan (L)	.710

Information structures

California at Los Angeles (C)	123A
Chicago (IS)	.360
Cornell (C)	.409
Harvard (C)	.219a
Houston (C)	.332
I.I.T. (C)	.330
Iowa State (C)	.551,552,553
Kansas State (C)	.525
Maryland (C)	340,420
Michigan (C)	.476
Missouri at Rolla (C)	.253
Oklahoma (C)	.5413
Pennsylvania (EE)	.590
Pennsylvania State (C)	404,535
Pittsburgh (IS)	.255
Toronto (L)	2720X
Washington (Seattle) (C)	508,510
Washington (St. Louis) (C)	561,562

Information systems

American (BA)	55.651,55.750
California at Los Angeles (C)	100D,226D
California at Los Angeles (Med. L)	.243
Georgia Tech (IS)	.436
Houston (C)	636,637
Indiana (L)	646,765
M.I.T. (EE)	6.233
Michigan (IE)	.473
New York (CUNY) (L)	.not numbered
Oklahoma (C)	.6903
Pennsylvania State (C)	.540
Pittsburgh (C)	.281
Pittsburgh (IS)	.256

Information theory

Chicago (IS)	321,322
Georgia Tech (IS)	424,629
Maryland (C)	.755
M.I.T. (EE)	6.536
North Carolina at Chapel Hill (C)	138,288
Ohio State (C)	788.01,805,806,888.01
Pennsylvania (EE)	615,638
Pennsylvania State (C)	.450
Pittsburgh (C)	.214
Washington (Seattle) (C)	576,577

Information transfer *see* **Learning theory**

Intelligence *see also* **Learning theory**
Pennsylvania (EE) ... 650
Wisconsin at Madison (C) ... 731,732

Interlibrary cooperation *see* **Information networks**

Introduction to computers *see* **Computer science (basic)**

Language processing *see* **Automatic language processing**

Languages
Pittsburgh (IS) ... 211

Learning theory *see also* **Intelligence**
Auburn (EdM) ... 470
M.I.T. (EE) ... 18.405
Pennsylvania (EE) ... 721,731,750
Wisconsin at Madison (C) ... 765,766

Library automation *see* **Automation and libraries**

Library networks *see* **Information networks**

Linear programming
Bradley (C) ... 515
Michigan (IE) ... 510,610
Washington (St. Louis) (C) ... 571
Wisconsin at Madison (C) ... 525

Linguistics (natural languages) *see also*
Computational linguistics
Georgia Tech (IS) ... 404,608,710
I.I.T. (Sci.I) ... not numbered
M.I.T. (EE) ... 23.721,23.751,23.752,24.723,24.727
North Carolina at Chapel Hill (C) ... 128,178
North Carolina at Chapel Hill (L) ... 115
Pittsburgh (IS) ... 210
Pratt (L) ... 516
Washington (Seattle) (C) ... 461
Western Ontario (L) ... 551

Linguistics (programming languages) *see*
Computational linguistics; Programming languages

Logic
Georgia Tech (IS) ... 445,645
Houston (C) ... 682
Iowa State (C) ... 685
M.I.T. (EE) ... 24.727
Missouri at Rolla (C) ... 253
Pennsylvania (EE) ... 524,624,641,642
Pittsburgh (IS) ... 250

Machine language *see* **Programming (higher levels)**

Management
American (BA) ... 55.561
Drexel (L) ... 871
Georgia Tech (IS) ... 673
Indiana (L) ... 646

Management information systems
American (BA) ... 55.660,55.760
Auburn (IE) ... 664
California at Los Angeles (Med. L) ... 241
Chicago (IS) ... 385
Georgia Tech (IS) ... 706
M.I.T. (EE) ... 15.568
Michigan (IE) ... 573,575,673,773,873
North Carolina at Chapel Hill (L) ... 192
Ohio State (C) ... 765,788.12,888.12

Man-machine interaction
Auburn (IE) ... 464,665
Bradley (C) ... 516
Ohio State (C) ... 712,788.10,888.10
Pittsburgh (C) ... 292
Pittsburgh (IS) ... 258,259

Mathematical linguistics *see* **Computational linguistics**

Mathematical tools for information science
Case Western Reserve (L) ... 577,611,612
Chicago (L) ... 315,456
Columbia (L) ... K6124y
Georgia Tech (IS) ... 423
Maryland (L) ... 859D
New York (CUNY) (L) ... not numbered
Ohio State (C) ... 760,761
Pittsburgh (IS) ... 202,203,204
Syracuse (L) ... 720
Western Ontario (L) ... 557

Mechanical translation *see also* **Automatic language processing**
Chicago (IS) ... 376
Chicago (L) ... 405

Mechanical languages *see* **Programming languages (higher levels);**
Programming systems

Media *see also* **Non-book materials**
Auburn (EdM) ... 450,650,651,654
Columbia (L) ... K6095x,K6171y,S8061G
George Peabody (L) ... 380
Illinois (L) ... 354
I.I.T. (Sci.I) ... not numbered
Montreal (L) ... 644
New York (CUNY), Queens (L) ... 765TC
New York (SUNY) at Buffalo (L) ... 543,544,545
Oregon (L) ... 445
Rosary (L) ... 527
Rutgers (L) ... 542,544
Southern Mississippi (L) ... 470,471
Tennessee at Knoxville (L) ... 4750,5510,5690
Toronto (L) ... 2290X
Washington (Seattle) (L) ... 514
Western Kentucky (L) ... 445
Western Michigan (L) ... 618
Western Ontario (L) ... 559

Media centers
Columbia (L) ... S8061G
Denver (L) ... 97-443

Medical information systems
California at Los Angeles (Med. L) ... 491
Michigan (IE) ... 801

Microprogramming
Pennsylvania (EE) ... 672
Pittsburgh (C) ... 156

Models, modeling *see also* **Simulation**
American (BA) ... 55.632
California at Los Angeles (C) ... 123B
Case Western Reserve (L) ... 672
Ohio State (C) ... 806
Western Ontario (L) ... 557

Multiprocessing systems
Auburn (EE) ... 641
Washington (St. Louis) (C) ... 538

Natural language processing *see* **Automatic language processing**

Non-book materials *see also* **Media**
British Columbia (L) ... 613

Nonlinear programming

Michigan (IE)	611,711
Washington (St. Louis) (C)	573,574,575
Wisconsin at Madison (C)	726,727

Nonnumeric information processing

Wisconsin at Madison (C)	467

Nonnumeric programming

Kansas State (C)	535

Operating systems

American (BA)	55.637
Bradley (C)	606
Chicago (IS)	341
Cornell (C)	413
Georgia Tech (IS)	656,657
Harvard (C)	220r,251a,251br
I.I.T. (C)	450
Iowa State (C)	501,502,503
Missouri at Rolla (C)	283,361
Pittsburgh (C)	151,251,253
Washington (Seattle) (C)	551
Wisconsin at Madison (C)	537

Operations research *see also* **Systems analysis; Systems design**

Chicago (L)	308,309,456
Maryland (L)	859C
New York (CUNY) (L)	not numbered
New York (SUNY) at Buffalo (L)	510
North Carolina at Chapel Hill (L)	232
Pittsburgh (IS)	283
Sacramento State (BA)	211,294

Pattern recognition *see also* **Image processing**

Auburn (EE)	646
California at Los Angeles (C)	225M
Georgia Tech (IS)	705
I.I.T. (C)	514
M.I.T. (EE)	6.13
Missouri at Rolla (C)	447
Ohio State (C)	788.05,835,888.05
Pittsburgh (C)	271
Pittsburgh (IS)	254
Wisconsin at Madison (C)	765,766

Philosophy

Georgia Tech (IS)	646,710
Pittsburgh (IS)	206

Picture processing *see* **Image processing**

Process control

Auburn (IE)	471,671

Programming (basic)

American (BA)	55.333,56.334
Case Western Reserve (L)	571
Drexel (L)	815
Harvard (C)	110
I.I.T. (C)	202
Kansas State (C)	315
Maryland (L)	700,859A
New York (CUNY) (L)	not numbered
New York (CUNY), Queens (L)	790.2
North Carolina at Chapel Hill (C)	120
Pennsylvania (EE)	523A
Pratt (L)	not numbered
Rutgers (L)	571

Programming (higher levels)

Auburn (IE)	455
Bradley (C)	509,515
Cornell (C)	404,611
Harvard (C)	261r
Houston (C)	241,335,632
Kansas State (C)	410,425,535
Michigan (IE)	510,610,611,711
Missouri at Rolla (C)	163,183,465
North Carolina at Chapel Hill (C)	145
Ohio State (C)	641
Pennsylvania (EE)	531
Pennsylvania State (C)	411,530
Sacramento State (BA)	216
Syracuse (IS)	501,611,650
Washington (St. Louis) (C)	531,532,571,573,574,575
Wisconsin at Madison (C)	304,467,525,726,727

Programming language translators

Cornell (C)	412,700

Programming languages

American (BA)	55.633
California at Los Angeles (C)	1251,225K
Chicago (IS)	340
Cornell (C)	411,412,487,700
Georgia Tech (IS)	406,661
Harvard (C)	113,260
Houston (C)	431,661,668
I.I.T. (C)	440,540
Iowa State (C)	501,502,503
Kansas State (C)	440,610,640
Maryland (C)	440,745
M.I.T. (EE)	6.252,6.253,18.427,18.428
Missouri at Rolla (C)	264,430
North Carolina at Chapel Hill (C)	280,281
Ohio State (C)	755,855,888.07,888.11
Oklahoma (C)	5403,6203,6603
Pennsylvania (EE)	550,674,675
Pennsylvania State (C)	420,510,568-569,593
Pittsburgh (C)	123,154,218,221,228
Syracuse (IS)	613,830
Texas at Austin (C)	392K
Washington (Seattle) (C)	478,501,502
Washington (St. Louis) (C)	539
Wisconsin at Madison (C)	830

Programming systems (assemblers, interpreters, compilers, generators, input/output control systems, supervisors)

American (BA)	55.633
Auburn (EE)	643,644
Bradley (C)	607
California at Los Angeles (C)	125L,125N,225L
Chicago (IS)	361
Georgia Tech (IS)	761
Harvard (C)	295
Houston (C)	433,661
I.I.T. (C)	550
Kansas State (C)	620,710,711
Maryland (C)	600
Maryland (L)	711
M.I.T. (EE)	6.251,6.531
Missouri at Rolla (C)	333,433
North Carolina at Chapel Hill (C)	140,241,242
Ohio State (C)	756
Oklahoma (C)	5453
Pittsburgh (C)	222
Washington (Seattle) (C)	472,501,502
Washington (St. Louis) (C)	535
Wisconsin at Madison (C)	701,702

Publication techniques

American (BA)	55.656

Reprography

Columbia (L)	K6391y
Drexel (L)	814
Maryland (L)	674

Scientific management *see* **Operations research**

Search strategy *see also* **Information retrieval (basic)**
Drexel (L) .... .812

Self-organizing systems *see* **Artificial intelligence**

Semiotics
Georgia Tech (IS) .... .642

Sequential systems
Auburn (EE) .... .645

Signal processing
M.I.T. (EE) 6.05,6.275,6.611
Ohio State (C) .... .764

Simulation *see also* **Models, Modeling**
Auburn (IE) .... .617
Bradley (C) .... .516
California at Los Angeles (C) 224A
Cornell (C) IE9580
Oklahoma (C) .... .5703

Software *see* **Programming (basic); Programming (higher levels)**

Statistics *see* **Mathematical tools for information science; Information theory**

Symbol manipulation *see* **Nonnumeric data processing**

System theory
Georgia Tech (IS) 682,683

Systems analysis *see also* **Operations research**
American (BA) 55.511
California at Berkeley (L) 273,274
California at Los Angeles (Med. L) .... .240
Case Western Reserve (L) .... .673
Chicago (L) .... .388
Dalhousie (L) .... .104
Denver (L) 97-425
George Peabody (L) .... .313
I.I.T. (Sci. I) .... .not numbered
Indiana (L) .... .645
Kentucky (L) .... .613
Maryland (L) .... .715
Minnesota (L) 8-411
Montreal (L) .... .654
New York (CUNY), Queens (L) 766TA
New York (SUNY) at Albany (L) .... .636
New York (SUNY) at Buffalo (L) .... .564
Rutgers (L) .... .547
Sacramento State (BA) .... .214
Simmons (L) .... .186
Texas at Austin (L) .... .not numbered
Washington (Seattle) (L) .... .496

Systems design *see also* **Operations research**
American (BA) 55.560
California at Los Angeles (Med. L) .... .240
Denver (L) 97-425
Georgia Tech (IS) 638,738
Indiana (L) .... .645
Pittsburgh (C) .... .258
Toronto (L) 2730X

Systems planning *see* **Operations research**

Systems programming
California at Los Angeles (C) 126C
Cornell (C) .... .413
Harvard (C) 219a,219b
Ohio State (C) .... .740,788.06,888.06
Oklahoma (C) .... .6103
Pennsylvania (EE) 670,671
Pennsylvania State (C) .... .511
Washington (Seattle) (C) .... .552
Wisconsin at Madison (C) .... .536,736,737

Technical information handling *see* **Information retrieval (basic); Information retrieval (higher levels); Information retrieval (seminars)**

Text processing *see* **Automatic language processing**

Telecommunication *see* **Communications**

Theory of automata *see* **Automata theory**

INDEX OF FACULTY MEMBERS INTERESTED IN INFORMATION SCIENCE

Aceto, Vincent J. .... New York (SUNY) at Albany (L)
Aird, M. Jacques .... Montreal (L)
Alcorn, H.R. .... Missouri at Rolla (C)
Allen, Kenneth .... Rosary (L)
Allen, Stephen G. .... Sacramento State (BA)
Aman, Mohammed M. .... St. John's (New York) (L)
Anderson, Robert B. .... Houston (C)
Anthony, Carol .... Auburn (EdM)
Archer, H. Richard .... New York (SUNY) at Albany (L)
Arden, Bruce W. .... Michigan (C)
Aronson, Ruth .... New York (SUNY) at Albany (L)
Artandi, Susan A. .... Rutgers (L)
Ashenhurst, Robert L. .... Chicago (IS)
Atchison, William F. .... Maryland (C)
Atherton, Pauline .... Syracuse (L)
Avizienis, Algirdas A. .... California at Los Angeles (C)

Baer, Jean-Loup E. .... Washington (Seattle) (C)
Ball, William E. .... Washington (St. Louis) (C)
Barnes, Bruce H. .... Pennsylvania State (C)
Barnett, Michael P. .... Columbia (L)
Basili, Victor R. .... Maryland (C)
Bassler, Richard A. .... American (BA)
Bauer, Charles .... I.I.T. (C)
Beilke, Patricia .... Auburn (EdM)
Belzer, Jack .... Pittsburgh (IS); Western Ontario (L)
Berk, Robert A. .... Oregon (L)
Bernier, Charles L. .... New York (SUNY) at Buffalo (L)
Bertram, Sheila Kelley .... Alberta (L)
Berztiss, Alfs T. .... Pittsburgh (C)
Biermann, Alan W. .... Ohio State (C)
Bird, D.A. .... Western Ontario (L)
Bird, Warren .... North Carolina at Chapel Hill (L)
Bledsoe, Woodrow W. .... Texas at Austin (C)
Block, Henry .... Cornell (C)
Boaz, Martha .... Southern California (L)
Book, Ronald V. .... Harvard (C)
Bookstein, Abraham .... Chicago (L)
Boone, Morell D. .... Syracuse (L)
Booth A.D. .... Case Western Reserve (L)
Borko, Harold .... California at Los Angeles (L)
Borkowski, Casimir .... Pittsburgh (C); Pittsburgh (IS)
Bradley, William .... New York (CUNY) (L)
Brearley, Harrington C., Jr. .... Iowa State (C)
Brekhus, Elmo .... Minnesota (L)
Brenner, Everett H. .... New York (CUNY) (L); Pratt (L)
Brewer, Richard K. .... Kansas State (C)
Broadus, Robert N. .... Northern Illinois (L)
Brodman, Estelle .... Washington (St. Louis) (L)
Brooks, Frederick P. .... North Carolina at Chapel Hill (C)
Brooks, George H. .... Auburn (IE)
Brouse, Albert J. .... I.I.T. (Sci. I)
Buchanan, Oliver H. .... Pratt (L)
Budington, William S. .... I.I.T. (Sci. I)
Bunderson, C. Victor .... Texas at Austin (C)
Burgess, Robert S. .... New York (SUNY) at Albany (L)
Burkhardt, Walter H. .... Pittsburgh (C)
Burks, Arthur W. .... Michigan (C)
Bussell, Bertram .... California at Los Angeles (C)
Buttelmann, William H. .... Ohio State (C)
Byers, J.K. .... Missouri at Rolla (C)

Calhoun, Myron .... Kansas State (C)
Calingaert, Peter .... North Carolina at Chapel Hill (C)
Cameron, W.J. .... Western Ontario (L)
Campbell, Graham M. .... Pennsylvania State (C)
Caponio, Joseph F. .... Maryland (L)
Cardenas, Alfonso F. .... California at Los Angeles (C)
Cariou, Mavis O. .... Toronto (L)
Carr, Donald E. .... Sacramento State (BA)
Carr, John W., III .... Pennsylvania (EE)
Carroll, Billy D. .... Auburn (EE)
Carroll, Chester C. .... Auburn (EE)
Carroll, Hardy .... Western Michigan (L)
Cartwright, Kelley .... California at Los Angeles (L)
Caruso, Elaine .... Pittsburgh (IS)
Chandrasekaran, Balakrishnan .... Ohio State (C)
Cheatham, Thomas E., Jr. .... Harvard (C)
Chen, Ching-Chih .... Simmons (L)
Chen, John H.M. .... Southern Mississippi (L)
Cheshier, Robert G. .... Case Western Reserve (L)
Chiaraviglio, Lucio .... Georgia Tech (IS)
Chicorel, Marietta .... New York (CUNY), Queens (L)
Christensen, James H. .... Oklahoma (C)
Chu, Wesley W. .... California at Los Angeles (C)
Clark, Philip M. .... Rutgers (L)
Clemons, John .... Emory (L)
Clouse, R. Wilburn .... George Peabody (L)
Cobb, Jane Evelyn .... Auburn (EdM)
Cockshutt, Margaret E. .... Toronto (L)
Coffman, Edward G. .... Pennsylvania State (C)
Cohen, Dan .... Harvard (C)
Cohen, Martin .... Western Michigan (L)
Cole, Dorothy Ethlyn .... New York (SUNY) at Albany (L)
Cole, Ralph I. .... American (BA)
Collison, Robert L. .... California at Los Angeles (L)
Conaway, Charles W. .... New York (SUNY) at Buffalo (L)
Conner, William M. .... Pittsburgh (C)
Conway, Richard W. .... Cornell (C)
Cook, Kenneth H. .... Syracuse (L)
Cooley, William W. .... Pittsburgh (C)
Coons, S.A. .... Syracuse (IS)
Cooper, Michael D. .... California at Berkeley (L)
Cooper, William S. .... California at Berkeley (L)
Corbato, Fernando Jose .... M.I.T. (EE)
Costabile, Salvatore L. .... Maryland (L)
Courrier, Yves-G. .... Montreal (L)
Cox, Carl T. .... Tennessee at Knoxville (L)
Crow, James E. .... Drexel (L)
Crowley, Terence .... Illinois (L)
Cupper, Robert D. .... Pittsburgh (C)

Dale, Alfred G. .... Texas at Austin (C);
Texas at Austin (L)
Daley, Robert P. .... Chicago (IS)
Dammkoehler, Richard A. .... Washington (St. Louis) (C)
Damon, Gene A. .... Toronto (L)
Damtoft, Finn .... Dalhousie (L)
Darling, Louise .... California at Los Angeles (L);
California at Los Angeles (Med. L)
Davidson, C.H. .... Wisconsin at Madison (C)
Davis, Charles H. .... Michigan (L)
Davis, Richard A. .... Rosary (L)
Davis, Ruth M. .... Pittsburgh (C)
Dearth, D.W. .... Missouri at Rolla (C)
DeBoard, Judith A. .... East Carolina (L)
Debons, Anthony .... Pittsburgh (IS)
DeKock, A.R. .... Missouri at Rolla (C)
DeLutis, Thomas G. .... Ohio State (C)
deMaine, Paul A.D. .... Pennsylvania State (C)
Dennis, Jack B. .... M.I.T. (EE)
DeProspo, Ernest R., Jr. .... Rutgers (L)
Dertouzos, Michael L. .... M.I.T. (EE)
Dervin, Brenda .... Syracuse (L)
DesJardins, Robert B. .... North Carolina at Chapel Hill (L)
Deutsch, Edward S. .... Maryland (C)
Devine, Michael D. .... Oklahoma (C)
Dewar, Robert .... I.I.T. (C)
Dillon, Martin .... North Carolina at Chapel Hill (C);
North Carolina at Chapel Hill (L)
Divilbiss, J.L. .... Illinois (L)
Donovan, John J. .... M.I.T. (EE)
Doszkocs, Tamas .... Maryland (L)
Dougherty, Richard .... Syracuse (L)

Drott, M. Carl	Drexel (L)
Dubester, Henry J.	Maryland (L)
DuCote, Richard	Rosary (L)
Dwyer, Thomas A.	Pittsburgh (C)
Dym, Eleanor D.	Pittsburgh (IS)

Edmundson, Harold P.	Maryland (C)
Egan, Mary Joan	New York (SUNY) at Albany (L)
Eirich, Wayne	Western Kentucky (L)
Elder, Howard A.	North Carolina at Chapel Hill (C)
Emanuel, Joseph J.	Bradley (C)
Ernst, Ronald L.	Ohio State (C)
Evans, G. Edward	California at Los Angeles (L)
Everett, Gerald D.	Texas at Austin (L)

Fano, Robert M.	M.I.T. (EE)
Faries, Fithian	Western Kentucky (L)
Farley, John J.	New York (SUNY) at Albany (L)
Fassberg, Harold E.	American (BA)
Feller, Caroline J.	Oregon (L)
Feyock, Stefan	Oklahoma (C)
Finks, Lee	Emory (L)
Fisher, Gerald	I.I.T. (C)
Fisher, Paul S.	Kansas State (C)
Fisher, Stanley	New York (CUNY) (L)
Fitch, Frederic B.	Yale (IS)
Fitzwater, D.R.	Wisconsin at Madison (C)
Flanigan, Larry K.	Michigan (C)
Flood, Barbara	Drexel (L)
Forney, Charles	Pennsylvania State (C)
Foulk, Clinton R.	Ohio State (C)
Fowkes, William	Stanford (Comm.)
Frank, Nathalie	Pratt (L)
Fredkin, Edward	M.I.T. (EE)
Freedman, Donald A.	Sacramento State (BA)
Friedman, Joyce B.	Michigan (C)
Fry, Bernard M.	Indiana (L)
Fussler, Herman H.	Chicago (L)

Gagliardi, Ugo O.	Harvard (C)
Galler, Bernard A.	Michigan (C)
Gammon, William Howard	American (BA)
Gardner, Richard-K.	Montreal (L)
Garrison, Guy	Drexel (L)
Gillespie, Robert G.	Washington (Seattle) (C)
Gillett, Billy E.	Missouri at Rolla (C)
Giuliano, Vincent E.	New York (SUNY) at Buffalo (L)
Glasser, Robert G.	Maryland (C)
Goda, J.J., Jr.	Georgia Tech (IS)
Goffman, William	Case Western Reserve (L)
Goguen, Joseph A., Jr.	Chicago (IS)
Golde, Hellmut	Washington (Seattle) (C)
Goldstine, Jonathan	Chicago (IS)
Good, Donald I.	Texas at Austin (C)
Gorn, Saul	Pennsylvania (EE)
Gotterer, Malcolm H.	Pennsylvania State (C)
Gough, James, Jr.	Georgia Tech (IS)
Graves, Robert L.	Chicago (IS)
Gray, Harry J.	Pennsylvania (EE)
Green, Jay O.	Denver (L)
Greenburg, A. Gerson	I.I.T. (Sci. I)
Greene, Peter H.	Chicago (IS)
Gries, David	Cornell (C)
Griffin, Hillis L.	Rosary (L); Wisconsin at Madison (L)
Griffith, Belver	Drexel (L)
Grosky, William I.	Georgia Tech (IS)
Grosvenor, Dale D.	Iowa State (C)
Grotzinger, Laurel A.	Western Michigan (L)
Gwynn, John M., Jr.	Georgia Tech (IS)
Gylys, Vytas B.	Oklahoma (C)

Haas, Katherine L.	Rosary (L)
Hagerty, Patrick E.	Maryland (C)
Hagler, Ronald A.	British Columbia (L)
Hamdy, Mohamed N.	Denver (L)
Hamlet, Richard G.	Maryland (C)
Hammer, Preston C.	Pennsylvania State (C)
Hammond, William M.	Bradley (C)
Harmon, Glynn	Texas at Austin (L)
Harris, Frederick H.	Chicago (IS)
Harris, Jessica L.	Columbia (L)
Hattery, Lowell H.	American (BA)
Hayes, Robert M.	California at Los Angeles (L)
Hazelton, Robert S.	Case Western Reserve (L)
Heiliger, Edward	Kent State (L)
Heilprin, Laurence B.	Maryland (C); Maryland (L)
Heller, Nelson	Washington (St. Louis) (C)
Henderson, Kathryn Luther	Illinois (L)
Hennie, Frederick Clair, III	M.I.T. (EE)
Herrick, Earl M.	Western Michigan (L)
Herring, Bruce E.	Auburn (IE)
Herriot, Robert G.	Washington (Seattle) (C)
Hershfield, Allan	Syracuse (L)
Hewitt, Carl E.	M.I.T. (EE)
Hiland, Leah F.	Iowa (L)
Hines, Theodore C.	Columbia (L)
Hodina, Alfred	Maryland (L)
Hogge, James H.	George Peabody (L)
Holden, Alistair	Washington (Seattle) (C)
Holland, John H.	Michigan (C)
Holm, Bart	Drexel (L)
Hool, James N.	Auburn (IE)
Hopfe, Manfred W.	Sacramento State (BA)
Horn, Andrew H.	California at Los Angeles (L)
Horowitz, E.	Cornell (C)
Hosch, Frederick	I.I.T. (C)
Hotimsky, C.M.	Western Ontario (L)
Howard, John H.	Texas at Austin (C)
Howerton, Paul W.	American (BA)
Hoyle, Norman E.	New York (SUNY) at Albany (L)
Hu, M.	Syracuse (IS)
Huang, Jin-Si	Bradley (C)
Huang, Jung-chang	Houston (C)
Hug, William E.	Auburn (EdM)
Humphrey, Allan J.	California at Berkeley (L)
Hunt, Earl B.	Washington (Seattle) (C)
Hunting, Eugene	Pittsburgh (C)
Hutton, Norman E.	Iowa State (C)
Hyman, Richard	New York (CUNY), Queens (L)

Immroth, John Phillip	Pittsburgh (IS)
Irons, Edgar T.	Yale (IS)
Irwin, J. David	Auburn (EE)
Isaacs, Dan Lee	Illinois (L)

Jackson, Eugene B.	Texas at Austin (L)
Jahoda, Gerald	Florida State (L)
Jeffrey, Richard C.	Pennsylvania (EE)
Jensen, Alton P.	Georgia Tech (IS)
Jesperson, Howard W.	Iowa State (C)
Johnson, Clyde W.	Michigan (IE)
Johnson, David L.	Washington (Seattle) (C)
Johnson, Gerald	Pennsylvania State (C)
Johnson, Millard	Washington (St. Louis) (L)
Jones, Neil D.	Pennsylvania State (C)
Joshi, Aravind K.	Pennsylvania (EE)

Kanal, Laveen	Maryland (C)
Kaplan, Stephen	Michigan (C)
Karplus, Walter J.	California at Los Angeles (C)
Katz, William A.	New York (SUNY) at Albany (L)
Katzer, Jeffrey	Syracuse (L)
Kazlauskas, Edward	Southern California (L)
Keller, Roy F.	Iowa State (C)
Kelly, Michael D.	Georgia Tech (IS)
Kennevan, Walter J.	American (BA)
Kenney, Brigitte	Drexel (L)
Kent, Allen	Pittsburgh (IS)
Kidd, Jerry S.	Maryland (L)

King, Donald W.	Maryland (L)
King, Willis K.	Houston (C)
Klein, S.	Wisconsin at Madison (C)
Kleinrock, Leonard	California at Los Angeles (C)
Klempner, Irving M.	New York (SUNY) at Albany (L)
Klinger, Allen	California at Los Angeles (C)
Klontz, Mary P.	Auburn (EdM)
Koenig, E.C.	Wisconsin at Madison (C)
Koh, Soonja Lee	Wisconsin at Milwaukee (L)
Korotkin, Arthur L.	Maryland (L)
Kraft, Donald H.	Maryland (L)
Kraus, David H.	Georgia Tech (IS)
Kraynek, William T.	Pittsburgh (C)
Krikelas, James	Wisconsin at Madison (L)
Kuno, Susumo	Harvard (C)
Kurmey, William J.	Toronto (L)

Laird, Donald T.	Pennsylvania State (C)
Lamb, Sydney M.	Yale (IS)
Lambert, Robert J.	Iowa State (C)
Lancaster, F. Wilfrid	Illinois (L)
Lanier, Gene D.	East Carolina (L)
Lay, Michael W.	Maryland (C)
Lazorick, Gerald J.	Ohio State (C)
Lee, Francis F.	M.I.T. (EE)
Lefkovitz, David	Pennsylvania (EE)
Lenahan, John J.	Houston (C)
Libbey, Miles A.	Indiana (L)
Licklider, Joseph C.	M.I.T. (EE)
Lieberman, Irving	Washington (Seattle) (L)
Lindstrom, Gary E.	Pittsburgh (C)
Liu, Chung L.	M.I.T. (EE)
Locke, David M.	I.I.T. (Sci. I)
Logsdon, Richard H.	New York (CUNY), Queens (L)
London, Gertrude	North Carolina at Chapel Hill (L)
Luckham, David C.	California at Los Angeles (C)

Mago, Guyula A.	North Carolina at Chapel Hill (C)
Malcolm, Janet M.	American (BA)
Maghsoodloo, Saeed	Auburn (IE)
Maple, Claire G.	Iowa State (C)
Maron, Melvin E.	California at Berkeley (L)
Martin, David F.	California at Los Angeles (C)
Martin, Miles W.	Toledo (L)
Matarazzo, James Michael	Simmons (L)
Mathis, Robert F.	Ohio State (C)
Matta, Seoud M.	Pratt (L)
Mauldin, Eugenia	Tennessee at Knoxville (L)
Maxian, M. Bruce	Long Island (L)
Mayne, Joseph	I.I.T. (C)
McCurdy, Charles R.	New York (CUNY), Queens (L)
McCusker, Sister Lauretta	Rosary (L)
McElderry, Stanley	Texas at Austin (L)
McLean, Isabel K.	Toronto (L)
Meadow, Charles T.	Maryland (L)
Meagher, Jack R.	Western Michigan (L)
Mealy, George H.	Harvard (C)
Meicler, Marcel	Houston (C)
Melkanoff, Michel A.	California at Los Angeles (C)
Merriam, Charles	Cornell (C)
Meyer, Albert R.	M.I.T. (EE)
Meyer, John F.	Michigan (C)
Michie, D.	Syracuse (IS)
Mignon, Edmond	Washington (Seattle) (L)
Miles, Louise W.	Auburn (EdM)
Miller, Edward	Missouri at Columbia (L)
Miller, Philip	Washington (St. Louis) (L)
Miller, Richard H.	Chicago (IS)
Miller, Thomas E.	Auburn (EdM)
Minker, Jack	Maryland (C)
Minsky, Marvin L.	M.I.T. (EE)
Miron, M.S.	Syracuse (IS)
Mitchell, David	New York (SUNY) at Albany (L)
Mitroff, Ian	Pittsburgh (IS)
Mogull, Robert G.	Sacramento State (BA)
Mohler, Ronald R.	Oklahoma (C)
Montgomery, K. Leon	Pittsburgh (IS)
Moore, R.E.	Wisconsin at Madison (C)
Morehead, Joseph H., Jr.	New York (SUNY) at Albany (L)
Morris, Herbert A.	Bradley (C)
Moses, Joel	M.I.T. (EE)
Mott, Thomas H., Jr.	Rutgers (L)
Muntz, Richard R.	California at Los Angeles (C)
Murphy, Layton B.	Texas at Austin (L)

Nagle, H. Troy, Jr.	Auburn (EE)
Narendra, Kumpati S.	Yale (IS)
Neill, S.D.	Western Ontario (L)
Nemsik, James A.	Auburn (EdM)
Newhouse, Albert	Houston (C)
Newton, Rita M.	Bradley (C)
Noonan, Robert E.	Maryland (C)

O'Connell, E.J.	Syracuse (IS)
Oettinger, Anthony G.	Harvard (C)
Oldehoeft, Arthur E.	Iowa State (C)
Olson, Edwin E.	Maryland (L)
O'Malley, Michael H.	Michigan (C)
O'Neil, Patrick E.	M.I.T. (EE)
O'Neill, Edward T.	New York (SUNY) at Buffalo (L)
Orden, Alex	Chicago (IS); Chicago (L)
Orsini, Lillian K.	New York (SUNY) at Albany (L)
Overmyer, LaVahn M.	Case Western Reserve (L)
Oxley, John Howard	Dalhousie (L)

Packer, Katherine H.	Toronto (L)
Page, Benjamin F.	Washington (Seattle) (L)
Painter, Anne	Drexel (L)
Paisley, William	Stanford (Comm.)
Palmer, Richard Phillips	Simmons (L)
Parker, Edwin	Stanford (Comm.)
Patil, Suhas S.	M.I.T. (EE)
Paulson, Peter J.	New York (SUNY) at Albany (L)
Payne, James A.	Oklahoma (C)
Pendrill, G.R.	Western Ontario (L)
Pepinsky, Harold B.	Ohio State (C)
Perlis, Alan J.	Yale (IS)
Peterson, P.L.	Syracuse (IS)
Petrarca, Anthony E.	Ohio State (C)
Phillips, Dolores J.	Toronto (L)
Pia, J.J.	Syracuse (IS)
Piggford, Roland R.	New York (SUNY) at Albany (L)
Pinkerton, T.B.	Wisconsin at Madison (C)
Piternick, Anne Brearley	British Columbia (L)
Pizer, Stephen M.	North Carolina at Chapel Hill (C)
Plummer, Robert P.	Houston (C)
Pohm, Arthur V.	Iowa State (C)
Pollack, Seymour V.	Washington (St. Louis) (C)
Pollock, Stephen M.	Michigan (IE)
Pople, Harry E.	Pittsburgh (C)
Pottle, Christopher	Cornell (C)
Pound, Lelia D.	Oklahoma (C)
Powers, Sister Mary Luella	Rosary (L)
Pratt, Allan	Indiana (L)
Pratt, Terence W.	Texas at Austin (C)
Preschel, Barbara M.	New York (CUNY); Queens (L); Pratt (L)
Prywes, Noah S.	Pennsylvania (EE)
Purcell, Gary R.	Tennessee at Knoxville (L)
Pyle, L. Duane	Houston (C)

Ramey, James	Drexel (L)
Randels, James B.	Ohio State (C)
Rawski, Conrad H.	Case Western Reserve (L)
Reed, David F.	New York (SUNY) at Buffalo (L)
Reeker, Larry H.	Ohio State (C)
Rees, Alan M.	Case Western Reserve (L)
Reitman, Walter	Michigan (C)
Richmond, Phyllis A.	Case Western Reserve (L)
Riddle, William E.	Michigan (C)

Ritchie, Robert W.	Washington (Seattle) (C)
Roberts, Donald F.	Stanford (Comm.)
Roberts, Edward G.	Georgia Tech (IS)
Robinson, John A.	Syracuse (IS)
Rockafellar, Ralph T.	Washington (Seattle) (C)
Rocks, James K.	American (BA)
Rogers, David E.	Georgia Tech (IS)
Rolland-Thomas, Paule	Montreal (L)
Roper, Fred	North Carolina at Chapel Hill (L)
Rosenberg, Kenyon C.	Kent State (L)
Rosenberg, Marvin I.	American (BA)
Rosenberg, Victor	California at Berkeley (L)
Rosenfeld, Azriel	Maryland (C)
Rothenberg, M.	Syracuse (IS)
Rubinoff, Morris	Pennsylvania (EE)
Rush, James E.	Ohio State (C)

Salton, Gerard	Cornell (C)
Saltzer, Jerome H.	M.I.T. (EE)
Samore, Theodore	Wisconsin at Milwaukee (L)
Saracevic, Tefko	Case Western Reserve (L)
Sargent, Charles W.	Missouri at Columbia (L)
Sass, Maureen	Stanford (Comm.)
Schabas, Ann H.	Toronto (L)
Schlueter, Reinhold A.	Wisconsin at Milwaukee (L)
Schrage, Linus E.	Chicago (IS)
Schultheiss, Peter M.	Yale (IS)
Schultz, Martin H.	Yale (IS)
Schuster, Donald H.	Iowa State (C)
Schwartzlander, H.	Syracuse (IS)
Sessions, Vivian S.	New York (CUNY) (L)
Shapero, Alfred	Texas at Austin (L)
Sharify, Nasser	Pratt (L)
Shaw, Alan C.	Washington (Seattle) (C)
Shearer, Kenneth	North Carolina at Chapel Hill (L)
Shepherd, Clayton A.	Indiana (L)
Sheppard, Allan N.	Auburn (EdM)
Shera, Jesse H.	Case Western Reserve (L)
Sherman, Donald	California at Berkeley (L)
Shirey, Donald L.	Pittsburgh (IS)
Shurtleff, Donald	Missouri at Columbia (L)
Sibley, Edgar H.	Michigan (IE)
Sibley, Robert A., Jr.	Houston (C)
Siegmann, Philip J.	Georgia Tech (IS)
Silverston, Stefan M.	Iowa State (C)
Simmons, Peter	British Columbia (L)
Simmons, Robert F.	Texas at Austin (C); Texas at Austin (L)
Simonton, Wesley	Minnesota (L)
Sincovec, Richard F.	Kansas State (C)
Sineath, Timothy Wayne	Simmons (L)
Skelley, Grant	Washington (Seattle) (L)
Slamecka, Vladimir	Georgia Tech (IS)
Sloan, Lynda W.	New York (CUNY) (L)
Slote, Stanley J.	New York (CUNY), Queens (L)
Smith, Chester M.	Pennsylvania State (C)
Smith, Leo Anthony	Auburn (IE)
Smith, Richard D.	Washington (Seattle) (L)
Smith, Susan S.	New York (SUNY) at Albany (L)
Sparks, C. Glenn	Texas at Austin (L)
Squires, Burton	Pennsylvania State (C)
Stafford, Robert L.	Pittsburgh (C)
Stager, S.P.	Missouri at Rolla (C)
Stanat, Donald F.	North Carolina at Chapel Hill (C)
Standish, Thomas A.	Harvard (C)
Stanfield, Jonathan	Washington (Seattle) (C); Washington (Seattle) (L)
Sterling, Theodor D.	Washington (St. Louis) (C)
Stevens, John D.	Iowa State (C)
Stevenson, Gordon	New York (SUNY) at Albany (L)
Stewart, Robert M., Jr.	Iowa State (C)
Stiff, Ronald	I.I.T. (Sci. I)
Stockdale, John M.	Sacramento State (BA)
Storm, Edward F.	Syracuse (IS)
Strauss, Jon	Washington (St. Louis) (L)
Strawn, George P.	Iowa State (C)
Sullivan, Francis E.	Pittsburgh (C)
Svenonius, Elaine F.	Denver (L)
Svoboda, Antonin	California at Los Angeles (C)
Swank, Raynard Coe	California at Berkeley (L)
Swanson, Don R.	Chicago (L)
Swanson, Rowena W.	Denver (L)
Sweeney, James A.	Oklahoma (C)

Tagler, John	Pratt (L)
Tague, J.	Western Ontario (L)
Tallman, Johanna E.	California at Los Angeles (L)
Taulbee, Orrin E.	Pittsburgh (C)
Taylor, Celianna	Ohio State (C)
Taylor, Marion R.	Emory (L)
Thomas, Rex A.	Iowa State (C)
Thomason, Richmond H.	Yale (IS)
Tobey, Robert	I.I.T. (C)
Travis, L.E.	Wisconsin at Madison (C)
Treu, Siegfried	Pittsburgh (C)
Troxel, Donald E.	M.I.T. (EE)
Trucks, Louis B.	Auburn (IE)
Trump, Thomas N.	Kansas State (C)
Tucker, A.B.	Missouri at Rolla (C)
Tuteur, Franz B.	Yale (IS)

Ubhaya, Vasant	Washington (St. Louis) (C)
Uhr, L.M.	Wisconsin at Madison (C)
Ulrichson, Dean L.	Iowa State (C)

Vagianos, Louis	Dalhousie (L)
Vaillancourt, Pauline M.	New York (SUNY) at Albany (L)
Valach, Miroslav	Georgia Tech (IS)
Venezky, R.L.	Wisconsin at Madison (C)
Virgo, Julie A.	Chicago (L)
Voos, Henry	Rutgers (L)

Waldhart, Thomas J.	Kentucky (L)
Walker, Terry M.	Houston (C)
Walljasper, Stanley J.	Pittsburgh (C)
Walston, Claude E.	Maryland (L)
Walther, La Vern A.	Northern Illinois (L)
Webster, Dennis B.	Auburn (IE)
Weeks, David C.	American (BA)
Wegbreit, Eliot L.	Harvard (C)
Weil, Roman L.	Chicago (IS)
Weinberg, Roger	Kansas State (C)
Weiner, Peter	Yale (IS)
Weinkam, James J.	Washington (St. Louis) (C)
Weinstein, Frederick D.	New York (SUNY) at Albany (L)
Weintraub, D. Kathryn	Wisconsin at Milwaukee (L)
Weiss, Stephen F.	North Carolina at Chapel Hill (C); North Carolina at Chapel Hill (L)
Weizenbaum, Joseph	M.I.T. (EE)
Wellisch, Hans	Maryland (L)
Welt, Isaac D.	American (BA)
Whalen. Lucille	New York (SUNY) at Albany (L)
Whitby, Thomas J.	Denver (L)
White, Charles R.	Auburn (IE)
White, Janette H.	Western Ontario (L)
White, Lee J.	Ohio State (C)
Wigington, Ronald L.	Ohio State (C)
Williams, C.M.	Pennsylvania State (C)
Williams, James	Pittsburgh (IS)
Williams, John H.	Cornell (C)
Williams, Martha E.	I.I.T. (Sci. I)
Winograd, Terry A.	M.I.T. (EE)
Winston, Patrick H.	M.I.T. (EE)
Wojcik, Anthony	I.I.T. (C)
Wolfson, R.	Syracuse (IS)
Woods, William A., Jr.	Harvard (C)

Wright, Charles T., Jr.	Iowa State (C)
Wyatt, Joe B.	Houston (C)
Wyman, J.	Syracuse (IS)
Yamada, Hisao M.	Pennsylvania (EE)
Yngve, Victor H.	Chicago (IS); Chicago (L)
Yovits, Marshall C.	Ohio State (C)
Yu, Dahsoong	Oklahoma (C)
Zaloom, Victor Anthony	Auburn (IE)
Zeigler, Bernard P.	Michigan (C)
Zelkowitz, Marvin	Maryland (C)
Zingg, Roy J.	Iowa State (C)
Zunde, Pranas	Georgia Tech (IS)

STUDENT CHAPTERS

of

AMERICAN SOCIETY FOR INFORMATION SCIENCE

CAPITAL AREA
Faculty Advisor: Laurence B. Heilprin

CASE WESTERN RESERVE UNIVERSITY
Faculty Advisor: Tefko Saracevic

COLUMBIA UNIVERSITY
Faculty Advisor: Theodore C. Hines

DAYTON, UNIVERSITY OF
Faculty Advisor: Edward A. Janning

DREXEL UNIVERSITY
Faculty Advisor: Barbara Flood

INDIANA UNIVERSITY
Faculty Advisor: Miles A. Libbey

NASHVILLE UNIVERSITY CENTER
Faculty Advisor: R. Wilburn Clouse

PITTSBURGH, UNIVERSITY OF
Faculty Advisor: Jack Belzer

PRATT INSTITUTE
Faculty Advisor: Oliver H. Buchanan

RUTGERS UNIVERSITY
Faculty Advisor: Henry Voos